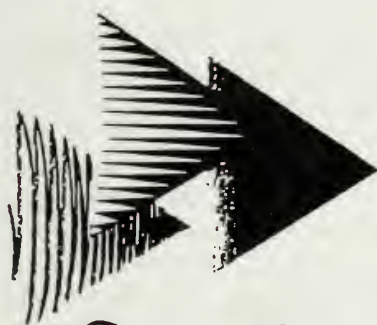# INFORMATION PROCESSING

Course of Studies

DRAFT

1993–94 Field Review

- Introductory Level
- Intermediate Level
- Advanced Level

Career&
Technology
STUDIES

AUGUST 1993

Alberta
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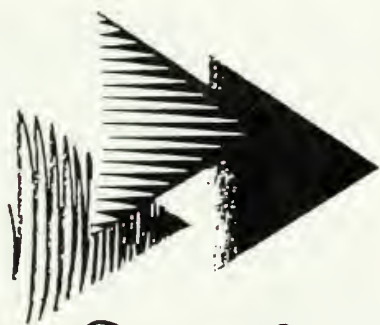- Advanced Level

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NOTE: Questions or comments about this course of studies are welcome and should be directed to:

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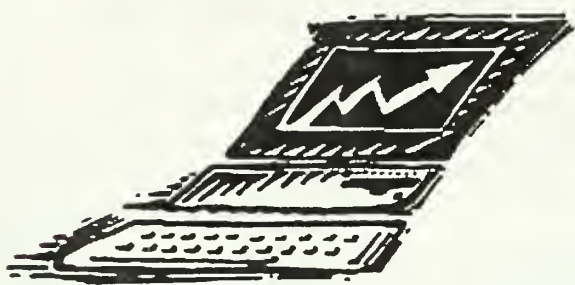> Fax: (403) 381–5734

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TABLE OF CONTENTS

INFORMATION PROCESSING

A. STRAND RATIONALE AND PHILOSOPHY

To understand the shift from an *industrial society* towards an *information age*, it is important that a student understands the significance of the current technological development and how technology affects an individual's daily life as well as the impact it has on the world of work.

Information Processing provides for the development of:

- a meaningful study of technological trends

- an understanding of the ethical and societal issues concerning technological development and its impact on society

- technological skills and knowledge designed for personal use

- transferable technological skills and knowledge to other curriculum areas

- technological skills and knowledge required for the world of work.

Information Processing represents the study of electronic technologies as they apply to personal use and the business environment.

Students will learn to input, process and output information in the following areas:

- computer operations including stand-alone, local area and wide area network systems as well as keyboarding speed and accuracy skill development

- productivity software with an emphasis on text (word processing), data (spreadsheet and data base) and presentation (graphics and desktop publishing) activities

- information management systems that focus on notes (notemaking, notetaking, note usage, keyboard composing, dicta keying), records (storage and retrieval), procedures (electronic office and specializations)

- emerging technologies (sound, animation, robotics, virtual environment, artificial intelligence)

- programming (procedure-oriented and object-oriented).

As we move more rapidly into the information age, it is crucial that students are able to use electronic technologies to access and manipulate information in an efficient manner. Accurate, timely information is the basis for sound decision making and effective communication.

Students will be able to use the competencies developed in the Information Processing strand in personal, daily applications and as a basis for further study or job entry.

As students build confidence in their understanding of the various information processing tools and processes, they will be able to transfer their knowledge and skill to a wide range of contexts. By focusing on basic and transferable competencies, students will be better able to adapt to the continual changes caused by the evolving technologies.

Information Processing uses a systems approach to learning development. Emphasis is on integration and application in realistic contexts. Students, in consultation with their teacher, will assume the major responsibility to identify, research and complete the application activities, and to assess their achievement. Successful completion of modules in this strand will provide the student with background and skills required for entry-level employment or for further post-secondary education.

Activity	Outcomes (Competencies)

Problem Statement
– what to do
– how to do it
– evaluation
   processes
 	
Investigation/
Research
– technology
– software
– facilities
 	
Analysis/Decision
– range of
   possibilities
– feasibility study
 	
Simulation
Application
– process
– product
	Analysis
	Planning (short-/long-
	   range)
	Decisions
	Validation
	Research (literature/
	   interviews)
	Management
	   (time/resources/people)
	Organizing/sequencing
	Data manipulation
	Application
	Cognitive (skills
	   development
	   integration)
	Psychomotor (skills
	   development
	   integration)
	Affective (skills
	   development
	   integration
	
	Communication (oral/
	   written)
	
	Responsibility
	Leadership
	Group effectiveness
	Interdependence
	Initiative
	Creativity
	Independence

B. STRAND ORGANIZATION

CURRICULUM STRUCTURE

The Information Processing modules are organized at three levels, introductory, intermediate and advanced, which denote the degree of complexity and level of student achievement expected for success.

Students at the introductory level will work with teacher guidance. All modules in this level are designed to provide students with an opportunity to develop basic operational competence skills and conceptual knowledge primarily involving personal applications. The context at this level provides students with the opportunity to acquire prerequisite skills for the intermediate level.

At the intermediate level, students are expected to work with limited direct instruction from their teacher. All modules in the intermediate level are designed to provide students with an opportunity to develop application opportunities in a wide range of study areas by expanding and refining basic skills. Students will have the opportunity to develop application competence in several computer areas including in-depth specialization. The focus of the content in this level is vocationally oriented with an emphasis on developing increased career awareness. In addition, this level provides the necessary background required for the advanced level.

At the advanced level, students are expected to take personal responsibility for their learning, to work cooperatively when appropriate, and to require limited direct instruction from their teacher. All modules in the advanced level are designed to provide students with integration and synthesis opportunities in a simulation/research/work experience environment. Students will be expected to assume major responsibilities in determining the specific focus of each module(s), conducting the associated research, demonstrating initiative in completing the related activities, and evaluating the completed project.

DEVELOPMENT MODEL

The three dimensions of the developmental model for Information Processing (on page 4) provide the framework for selecting and organizing the content and learnings included in the strand.

- The INTEGRATING CONCEPTS identify the three interrelated components of technology that together can support effective problem solving and decision making. Key computer related functions of input, processing and output constitute the activities involved in problem solving and decision making.

- The LEARNING CONTEXTS foster the development of knowledge and behaviours that will enable students to meet the demands of daily living, further education and workplace expectations.

- The STRAND COMPONENTS provide situational and concrete learning experiences, which link knowledge, skills and attitudes in realistic situations. Five themes represent the key functions in processing information: computer operations, productivity software, information management systems, emerging technologies and programming.

PROGRAM PLANNING

The Information Processing curriculum framework ensures that students do not repeat content. Schools and teachers have increased flexibility to design programs based on the needs and interests of their students and circumstances in the school and community. The levels framework will challenge students to keep learning and will provide new and exciting opportunities at each level.

Information Processing modules were designed to fit within a suggested 25-hour instructional time period. This is only a guideline to facilitate planning, because the curriculum is competency based and the student may take more or less time to gain the knowledge, skills and attitudes within each module. Grouping the modules will create a larger time slot and allow students' fast or slow progress to average out to the planned time requirement. Students who have made rapid progress are expected to move to the next selected module in their program plan.

Teachers will select three or more modules to design a course. Criteria that should be considered in designing course sequences are:

- student interests, abilities and career aspirations
- expertise and interests of the teacher
- potential linkages with other school programs.

INTEGRATING CONCEPTS

STRAND COMPONENTS
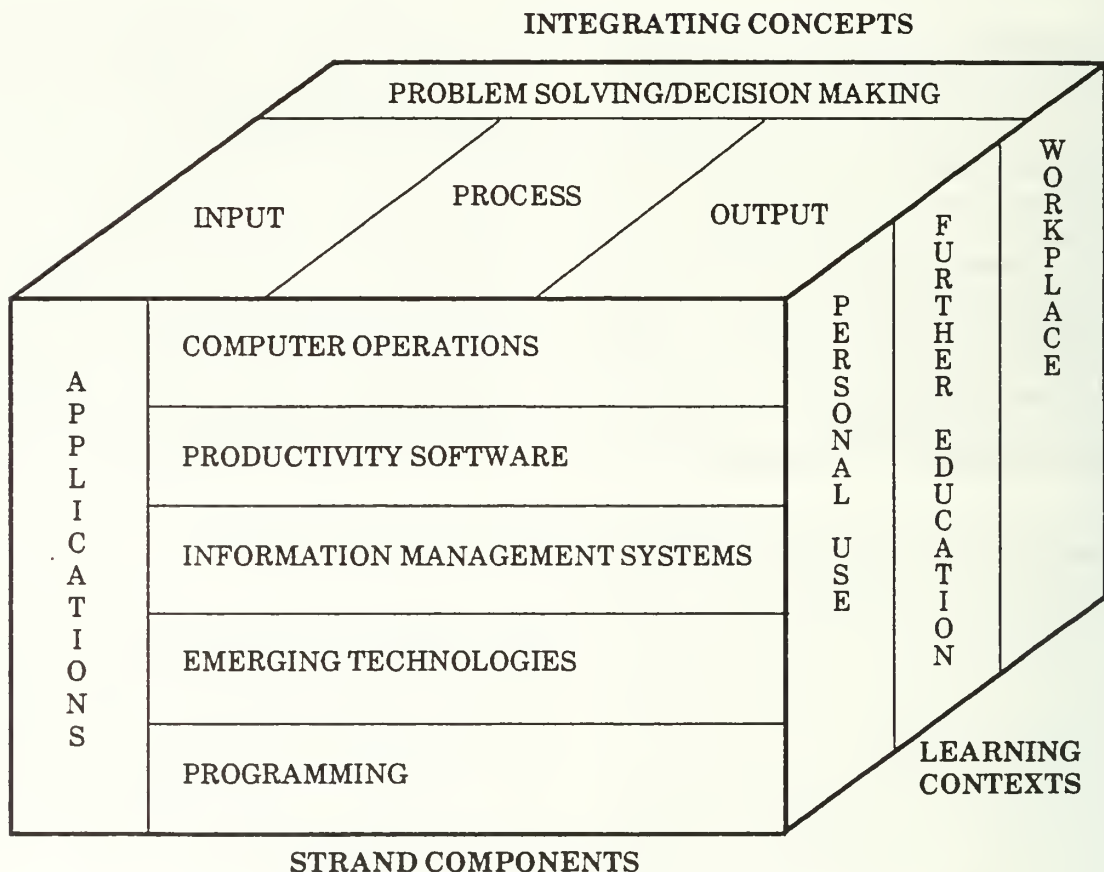
Sample

The following is an example of a 3-credit course:

MODULES
Workstation Operations (INF101)
Keyboarding I (INF102)
Word Processing I (INF103)
RATIONALE/LEARNINGS
The successful completion of these modules will enable students to effectively use a computer for personal use as well as provide a sound basis for further skills development and refinement on additional computer applications. This course complements many CTS strands, core programs and other, complementary programs.

LINKAGES

CTS modules are designed to be linked together in an appropriate combination to meet student needs. Each module equals 1 credit. Courses may be designed by using only Information Processing modules or by combining Information Processing modules with modules from other CTS strands. This provides students with a wider exposure to CTS opportunities and meets their individual needs.

Specific knowledge and skills relating to presentation software packages are required in Information Processing. Techniques of layout and design are delivered through Communication Technology and Design Studies.

For example, the knowledge and skills acquired in Information Processing modules dealing with desktop publishing and graphics tools may benefit students in Communication Technology. Conversely, a layout and design module from Communication Technology may benefit students who are interested in desktop publishing.
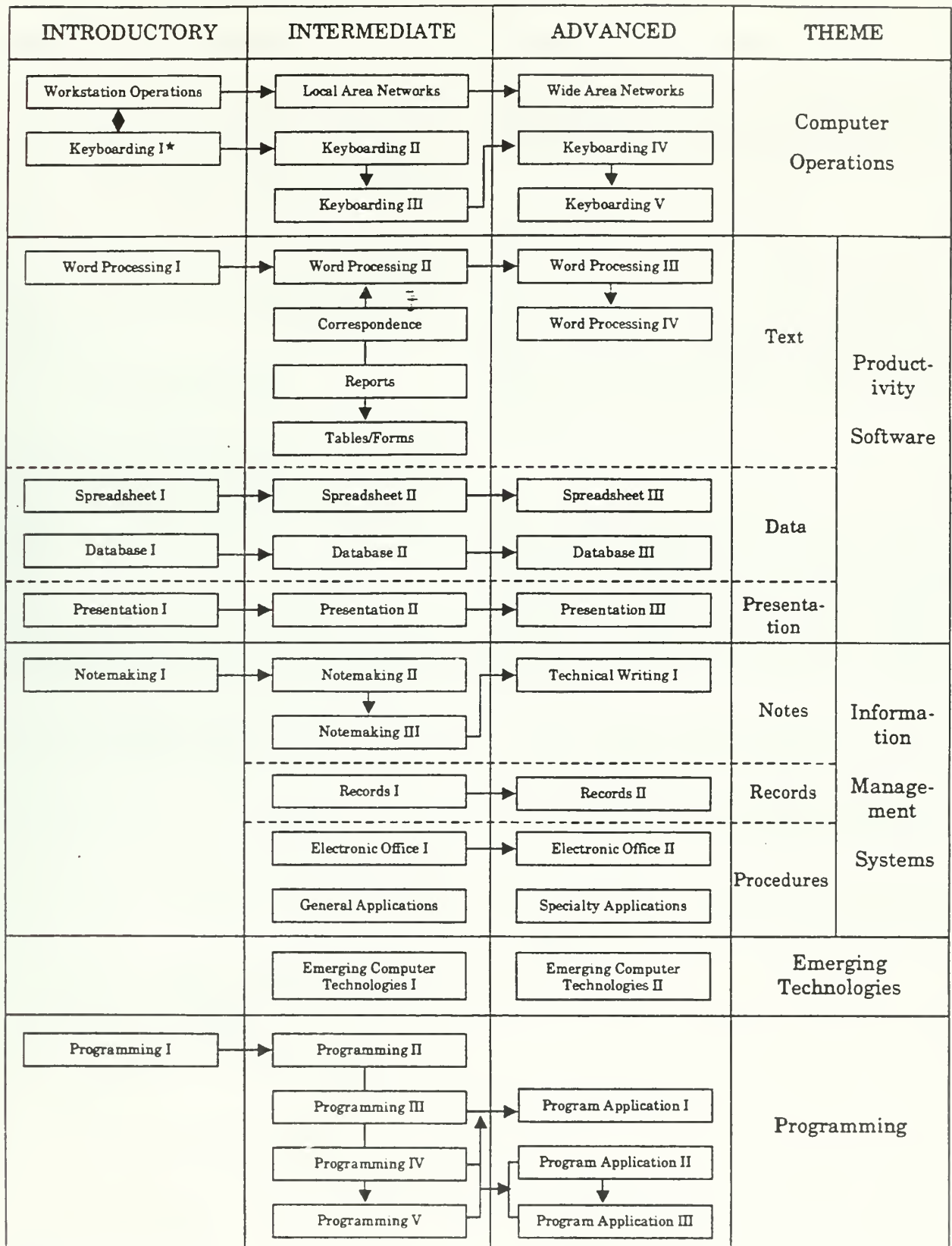
Teachers wishing to combine these or any other competencies, should review the appropriate modules within all strands.

INFORMATION PROCESSING SCOPE AND SEQUENCE

INTRODUCTORY	INTERMEDIATE	ADVANCED	THEME	
Workstation Operations	Local Area Networks	Wide Area Networks	Computer Operations	
Keyboarding I★	Keyboarding II	Keyboarding IV		
	Keyboarding III	Keyboarding V		
Word Processing I	Word Processing II	Word Processing III	Text	Product-ivity Software
	Correspondence	Word Processing IV		
	Reports			
	Tables/Forms			
Spreadsheet I	Spreadsheet II	Spreadsheet III	Data	
Database I	Database II	Database III		
Presentation I	Presentation II	Presentation III	Presenta-tion	
Notemaking I	Notemaking II	Technical Writing I	Notes	Informa-tion Manage-ment Systems
	Notemaking III			
	Records I	Records II	Records	
	Electronic Office I	Electronic Office II	Procedures	
	General Applications	Specialty Applications		
	Emerging Computer Technologies I	Emerging Computer Technologies II	Emerging Technologies	
Programming I	Programming II		Programming	
	Programming III	Program Application I		
	Programming IV	Program Application II		
	Programming V	Program Application III		

★ Prerequisite to all modules.

C. CURRICULUM AND ASSESSMENT STANDARDS

CURRICULUM STANDARDS

Curriculum standards are expressed through learner expectations, which describe the competencies that students are expected to develop. They require students to be active learners who can combine knowledge, skills and attitudes within an applied context.

Learner expectations for Information Processing are categorized in three, progressively detailed stages: strand, module and specific learner expectations.

Strand Learner Expectations

Strand learner expectations describe the overall characteristics of the Information Processing program and students actively participating in that program. They also form the basis for specific learner expectations within each module.

In Information Processing the student will:

- identify the impact of evolving technology on society

- use a variety of electronic media in the communication process

- apply effective notemaking skills

- demonstrate efficient keyboarding skills

- use word-processing commands and functions

- develop software competencies in spreadsheet, database, graphics and desktop publishing applications

- design algorithms and code syntax instructions

- work with emerging technologies

- complete computer integrated/merged simulation projects.

Module Learner Expectations

Module learner expectations provide an overall curricular focus for each module. They describe what the student should know and be able to do to successfully complete the module.

Specific Learner Expectations

Specific learner expectations define the scope of learning, or content, to be covered within each module. They are a combination of knowledge, skills and attitudes and form the basis for assessment. Specific learner expectations for Information Processing modules are identified on pages 11 through 148.

ASSESSMENT STANDARDS

Assessment standards describe the conditions and criteria for determining whether or not a student's performance meets the required standard. Assessment standards for each module in Information Processing are under development and generally include the following expectations:

- at the introductory level students will be able to replicate a given example

- at the intermediate level students will follow instructions to produce output similar to a given example

- at the advanced level students will individually design and create acceptable output.

MODULE INF101:   WORKSTATION OPERATIONS

Level: Introductory

Prerequisite: Keyboarding I (INF102)

Computers are powerful tools that can very rapidly solve complex problems, provide convenience, safety and comfort while supporting a range of services that assist people to increase their productivity. This module is an introduction to the information processing workstation environment (computer architecture, hardware components, software, telecommunications) and provides an opportunity for "hands-on" exploration and personal use skill development.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of designated computer software commands and computer workstation techniques

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Text/Data Entry (Input)	*The student will:* • demonstrate appropriate key commands to: – boot the computer – open/load/create files – enter text/data – name files.	

Text/Data Manipulation (Process)	• demonstrate appropriate key commands to:
	 – format text/data
	 – proofread, edit text/data
	• move through file(s) efficiently by using appropriate cursor movement tools/commands
	• access at least two of the following software or firmware packages and applications:
	 – tutor (computer-based instruction)
	  • problem-solving applications
	  • simulations
	  • drill-and-practice
	  • tutorial application
	  • game applications
	 – tutee (computer programming languages)
	  • object-oriented language
	  • procedure-oriented language
	  • hypermedia
		"hands-on" opportunities with the:
		 – operating system
		 – monitor adjustments
		 – peripheral components
		 – hard drive, diskettes
		 – workstation
		personal computer purchase considerations
		identify intended use of a computer:
		 – personal/ business

Concept	Specific Learner Expectations	Notes

Text/Data Manipulation (Process) (continued)	*The student will:*
	
	    – tool (applications)
	      • graphics
	      • word processing
	      • database
	      • spreadsheet
	      • desktop presentation
	      • multimedia
	    – telecommunications
	      • bulletin board (modem)
	      • facsimile/electronic mail
	• utilize operating system software:
	    – supervisor
	    – default
	    – directories
	• utilize utility software:
	    – pre-defined routines
	    – spooler
	    – communications
	    – shell
	    – graphical use interface (GUI)
	• utilize language translator:
	    – assembler
	    – compiler
	    – interpreter
	• identify personal computer needs and provide specifications:
	    – intended use
	    – hardware components, peripherals, accessories
	    – software/firmware applications
	    – telecommunications
	    – upgrade possibilities
	    – customer support services
	    – cost
	    – availability
	    – other considerations
	• address societal issues:
	    – personal life
	    – professional life
	    – privacy
	    – security
	    – legal
	    – ethical
		– desktop/portable
		– stand-alone, networked
		– telecommunication
		– capability
		– other considerations
		
		hardware components, accessories (required, desired):
		– input
		– processing
		– output
		– telecommunication
		– storage
		
		supervisor— coordinates all processing activities
		
		software needs (required, desired):
		– pleasure, personal use
		– workplace
		
		to purchase/not to purchase, explain reason
		
		possible computer impact:
		– life more productive, pleasurable, job or career opportunity
		
		computer applications (home, education, community, work environment).

MODULE INF101: WORKSTATION OPERATIONS (continued)

Concept	Specific Learner Expectations	Notes

Text/Data Manipulation (Process) (continued)	*The student will:*
	   – computer infections (viruses, worms)
	   – future trends
	● use help functions and references as appropriate.	

Document Production (Output)	● demonstrate appropriate key commands to:
	   – save files
	   – print documents
	● demonstrate appropriate key commands to produce screen display(s) and hardcopy document(s).	

Workstation Use (Professionalism)	● review key operating system software, firmware features and capabilities
	● review key hardware features and capabilities:
	   – system requirements
	   – platform options
	   – command structure
	● identify computer system components and relationships
	   – people (user, professionals)
	   – procedures (operating, backup, preventive, emergency)
	   – data (facts, information, classifying, coding)
	   – hardware (input, processing, output, storage, telecommunication)
	   – software (system, utility, application)
	● describe computer:
	   – architecture and configurations
	   – peripherals (input, storage, output)
	   – telecommunications
	   – mainframe
	   – minicomputer
	   – microcomputer
	   – laptop
	● apply correct workstation position and routines that encourage:
	   – good health and safety (posture, positioning of hardware and furniture)
	   – security for hardware, software, supplies and personal work	

MODULE INF101: WORKSTATION OPERATIONS (continued)

Concept	Specific Learner Expectations	Notes

Workstation Use (Professionalism) (continued)	*The student will:*
	
	● demonstrate efficient and appropriate use of time and resources in terms of:
	  – start-up procedures
	  – organization of work area
	  – closing procedures
	
	● apply effective decision-making strategies in production assignments:
	  – plan activities
	  – organize data, information, resources
	  – consider alternatives
	  – evaluate activities/results
	
	● use related terminology to describe basic processes, procedures and tools.	

MODULE INF102:   KEYBOARDING I

Level: Introductory

Prerequisite: None

Corequisite: Workstation Operations (INF101; Recommended)

This module builds personal use keyboarding competencies, which are the basis for future skill in computer use and software applications. Students will develop accurate touch keyboarding and workstation techniques demonstrating efficient text entry, editing and printing of documents.

Module Learner Expectations and Assessment Standards

Module Learner Expectations	Assessment Standards	Emphasis (%)
The student will: ● enter text (straight copy) accurately at a keystroke rate suitable for personal use	*Assessment will be based on*: ● a series of five, 3-minutes straight copy timings (SI 1.0 to 1.2) over a period of no more than five consecutive class periods. The student will touch keystroke at a minimum of 25 words per minute with no more than one uncorrected error on at least three occasions. **Refer to assessment instrument: Keyboarding—Level I**	30–40
● demonstrate efficient text entry, document management and workstation techniques	● observations over the last quarter of the instructional period, during timed and untimed work. Students will consistently demonstrate touch keyboarding on alphabetic keys and appropriate workstation techniques and behaviours as outlined in assessment instrument: **Workstation Techniques—Level I.**	40–60

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Text Entry (Input)	*The student will*: ● demonstrate increasingly rapid, accurate touch keystroking on straight copy of – alphabetic keys – punctuation keys (.,;:?) – service keys (enter, shift, delete, backspace, tab)	develop speed and accuracy at the word and phrase level using short, repetitive timings (12 seconds to 1 minute) with straight copy text of varying SI. (1.0–1.3)

Concept	Specific Learner Expectations	Notes
Text Entry (Input) (continued)	*The student will:* • use function and cursor movement keys efficiently • demonstrate correct keystroking technique – enter text using designated fingers – maintain home-row position – demonstrate correct posture (hand, arm, body) • proofread and edit text while on screen to ensure text is without error • analyze errors in keystroking and initiate remediation as appropriate for – spelling, shifting, punctuation and spacing errors – transposed, repeated, omitted letters.	introduce only the word-processing and computer commands that are required as an instructional tool for developing keyboarding skill.
Document Management (Process/Output)	• use appropriate document management procedures and key commands to enter, edit, format, save, recall, print and delete documents • format documents as required including correct line lengths, vertical spacing, and tab settings.	students should be encouraged to use spell check software options.
Workstation Use (Professionalism)	• apply correct workstation position and routines that encourage: – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work • demonstrate efficient and appropriate use of time and resources in terms of: – start-up procedures – organization of work area – closing procedures • use related terminology to describe basic processes, procedures and tools.	technique is the major focus emphasizing touch development on easy material

MODULE INF103: WORD PROCESSING I

Level: **Introductory**

Prerequisite: **Keyboarding I (INF102)**

Corequisite: **Workstation Operations (INF101; Recommended)**

This module introduces basic word-processing functions and commands for the entry, formatting, editing and printing of letters, reports and tables.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of designated word-processing software commands and document management techniques to produce mailable word-processing documents

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Test Entry (Input)	*The student will:* - demonstrate appropriate key commands to – open/create files – enter text – name files.	
Test Manipulation (Process)	- demonstrate appropriate key commands to – format text • rulers/margins • line spacing • positioning (horizontally, vertically centred) • tabs • tables • font styles/sizes • footers/headers – proofread, edit text • move (cut and paste) • spell check • search and replace • delete text – paginate text	

Concept	Specific Learner Expectations	Notes
Test Manipulation (Process) (continued)	*The student will:* • move through document(s) efficiently by using appropriate cursor movement tools/commands • use help functions and references as appropriate.	arrows, select, undo, goto.
Document Production (Output)	• demonstrate appropriate key commands to: – save files – print documents • demonstrate appropriate key commands to produce the following documents in mailable form – reports • headings/subheading • references (footnotes, end notes, bibliography) • headers/footers • title page – personal and business letters • letter parts (date, inside address, salutations, complimentary closing, name/title, references) • letter styles – tables (single/multi-column) • headings • borders • rulers/tabs.	mailable form: accurate and correctly formatted use software table functions if available.
Workstation Management (Professionalism)	• review key features of the word-processing software package – capabilities – system requirements – platform options – command structure • apply correct workstation position and routines that encourage: – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work • demonstrate efficient and appropriate use of time and resources in terms of: – start-up procedures – organization of work area – closing procedures	

Concept	Specific Learner Expectations	Notes

Workstation Management (Professionalism) (continued)	*The student will:*
	● apply effective decision-making strategies in production assignments
	   – plan activities
	   – organize date/information/resources
	   – consider alternatives
	   – evaluate activities/results
	● use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF104: SPREADSHEET I

Level: **Introductory**

Prerequisite: **Keyboarding I (INF102)**

In this module students will learn to use spreadsheet software to electronically store, calculate or recalculate numerical data for general data manipulation and record-keeping.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of designated spreadsheet software commands and worksheet management techniques to generate an accurate, well -organized worksheet

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Data Entry (Input)	*The student will:*
	• demonstrate appropriate key commands to:
	  – open/record, create files
	  – enter data
	  – key/replicate/formulae
	  – number pad—values
	  – keyboard—labels
	  – replicate
	  – name files.
		create a spreadsheet by:
		– identifying an application
		– designing the format.

Data Manipulation (Process)	• demonstrate appropriate key commands to:
	  – save files
	  – customize and print worksheets
	    • format cells, rows, columns
	      - alignment
	      - number format ($, %, decimals)
	      - test format
	      - column widths/row heights
	      - borders/shading
	  – formulae
	  – edit cells, rows, columns, data
	    • moving data and formulae
	    • copying
	    • clearing
	    • replacing
		create a spreadsheet by:
		– identifying an application
		– designing the format
		
		built-in functions—create own

MODULE INF104: SPREADSHEET I (continued)

Concept	Specific Learner Expectations	Notes
Data Manipulation (Process) (continued)	*The student will:* – sort data (ascending, descending) • numeric • alphabetic – calculate/recalculate . • move through worksheet(s) efficiently by using appropriate cursor movement tools/commands: – split screen – freeze • use help functions and references as appropriate.	possibilities for: – personal worksheets – budgets – recipes – grades records – inventories – financial problem solving – table comparisons.
Worksheet Production (Output)	• demonstrate appropriate key commands to: – save files – customize and print worksheets • formats (portrait, landscape) • complete/sections • demonstrate appropriate key commands to produce the following worksheets in accurate, well-organized form.	
Workstation Management (Professionalism)	• review key features of the spreadsheet software: – capabilities – system requirements – platform options – command structure • apply correct workstation position and routines that encourage: – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work • demonstrate efficient and appropriate use of time and resources in terms of: – start-up procedures – organization of work area – closing procedures • apply effective decision-making strategies in production assignments – plan activities – organize data/information/resources	

MODULE INF104: SPREADSHEET I (continued)

Concept	Specific Learner Expectations	Notes

Workstation Management (Professionalism)	*The student will:*
	  – consider alternatives
	  – evaluate activities/results
	● use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF205:   CORRESPONDENCE

Level: Intermediate

Prerequisite: Keyboarding II (INF204)

Corequisite: Word Processing II (INF205)

This module improves workstation procedures and document production skills of word-processing functions and commands for the entry, formatting, editing and printing of correspondence.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of designated word-processing software commands and document management techniques to produce mailable correspondence

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Text/DataEntry (Input)	*The student will:*
	
	• demonstrate efficient and accurate keystroking and software command use to open and name files and to produce mailable documents
	
	• enter text from **formatted** copy in which text is:
	  – error free
	  – draft, edited
	  – unedited
	
	• plan layout and enter text from **unformatted** copy in which text is:
	  – error free
	  – draft, edited
	  – unedited.	

Text/Data Manipulation (Process)	• demonstrate appropriate key commands to:
	  – edit and manipulate text
	  – replicate, convert and append files
	  – prepare templates
	  – paginate documents
	
	• move through document(s) efficiently by using appropriate cursor movement tools/commands
	
	• use help functions and references as appropriate.	

Concept	Specific Learner Expectations	Notes
Document Production (Output)	*The student will:* ● clarify the purpose of the correspondence: – target audience – internal/external – single/multiple copy ● demonstrate appropriate key commands to produce mailable correspondence and memoranda, including the following features: – letter parts (date, inside/return addresses, salutations, complimentary closing, name/title, references) – letter styles – punctuation styles – placement – letterhead – mailing notations – address (labels, envelopes) – second page headings – enumerations – display paragraphs – form letters – mail merge – boilerplate ● demonstrate appropriate key commands to print and save documents using alternative formats.	

Workstation Management (Professionalism)	● apply correct workstation position and routines that encourage:
	 – good health and safety (posture, positioning of hardware and furniture)
	 – security for hardware, software, supplies and personal work
	
	● demonstrate efficient and appropriate use of time and resources in terms of:
	 – start-up procedures
	 – organization of work area
	 – closing procedures
	 – decision making
	  ● plan activities
	  ● organize data/information/resources
	  ● consider alternatives
	 – evaluate activities/results
	
	● use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF206:   REPORTS

Level:	Intermediate
Prerequisite:	Keyboarding II (INF202)
Corequisite:	Word Processing II (INF204)

This module improves workstation procedures, proofreading and document production skills of word-processing functions and commands for the entry, formatting, editing and printing of reports.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of designated word-processing software commands and document management techniques to produce mailable reports

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Text/Data Entry (Input)	*The student will:* - demonstrate efficient and accurate keystroking and software command use to open and name files and to produce mailable documents - enter text from **formatted** copy in which text is: – error free – draft, edited – unedited - plan layout and enter text from **unformatted** copy in which text is: – error free – draft, edited – unedited.	
Text/Data Manipulation (Process)	- demonstrate appropriate key commands to: – edit and manipulate text – replicate, convert and append files – prepare templates – paginate documents - move through document(s) efficiently by using appropriate cursor movement tools/commands - use help functions and references as appropriate.	

Concept	Specific Learner Expectations	Notes
Document Production (Output)	*The student will:* ● clarify the purpose of the correspondence: – target audience – internal/external – single/multiple copy ● demonstrate appropriate key commands to produce mailable reports, including the following features: – title page – titles/headings/subheadings – table of contents – bound/unbound formats – columns – display paragraphs – headers/footers – footnotes – bibliography – appendices ● prepare brief outline summary of report using enumerations ● demonstrate appropriate key commands to print and save documents using alternative formats.	
Workstation Management (Professionalism)	● review key features of the word-processing software package: – capabilities – system requirements – platform options – command structure ● apply correct workstation position and routines that encourage: – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work ● demonstrate efficient and appropriate use of time and resources in terms of: – start-up procedures – organization of work area – closing procedures	

Concept	Specific Learner Expectations	Notes
Workstation Management (Professionalism) (continued)	*The student will:* • apply effective decision-making strategies in production assignments: – plan activities – organize date/information/resources – consider alternatives – evaluate activities/results • use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF207: TABLES/FORMS

Level: Intermediate

Prerequisite: Keyboarding II (INF202)

Corequisite: Word Processing II (INF204)

This module improves workstation procedures and document production skills of word-processing functions and commands for the entry, formatting, editing and printing of tables/forms.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of designated word-processing software commands and document management techniques to produce mailable tables/forms.

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Text/Data Entry (Input)	*The student will:* • demonstrate efficient and accurate keystroking and software command use to open and name files and to produce mailable documents • enter text from **formatted** copy in which text is: – error free – draft, edited – unedited • plan layout and enter text from **unformatted** copy in which text is: – error free – draft, edited – unedited.	
Text/Data Manipulation (Process)	• demonstrate appropriate key commands to: – edit, manipulate and delete text – replicate, convert and append files • move through document(s) efficiently by using appropriate cursor movement tools/commands • use help functions and references as appropriate.	

Concept	Specific Learner Expectations	Notes
Document Production (Output) (continued)	*The student will:* • demonstrate appropriate key commands to produce mailable single and multi-column tables, including the following features: – headings, subheadings (multi-line) – boxed, ruled – special features – rulers/tabs – supplemental data (e.g., footnotes) – parallel columns – merged table (display paragraphs) – table specifications (if available) – cell attributes (fonts, justification) – borders – math calculations • demonstrate appropriate key commands to enter data and produce mailable forms, including the following examples: – interoffice memorandums – facsimile cover sheets – invoices – purchase orders – credit memos – application for employment – account statements • plan/create templates for commonly used forms (purchase order, statement, etc.) • demonstrate appropriate key commands to print and save documents using alternative formats.	
Workstation Management (Professionalism)	• review key features of the word-processing software package: – capabilities – system requirements – platform options – command structure • apply correct workstation position and routines that encourage: – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work	

MODULE INF207: TABLES/FORMS (continued)

Concept	Specific Learner Expectations	Notes
Workstation Management (Professionalism) (continued)	*The student will:* • demonstrate efficient and appropriate use of time and resources in terms of: – start-up procedures – organization of work area – closing procedures • apply effective decision-making strategies in production assignments: – plan activities – organize data/information/resources – consider alternatives – evaluate activities/results • use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF208: SPREADSHEET II

Level: Intermediate

Prerequisite: **Spreadsheet I (INF104)**

Corequisite: **Keyboarding II (INF202; Recommended)**

Spreadsheet software supports the efficient processing of data including recording, tracking, accounting, predicting real or hypothetical "what if" analyses and reporting the results both numerically and graphically in a variety of output formats. This module includes the use of selected advanced spreadsheet commands/functions that utilize charts, graphs, spreadsheet data merged into other documents.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of designated advanced spreadsheet software commands and worksheet management techniques to generate complex and accurate, well-organized worksheets, utilizing charts and graphics merged with other documents

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Data Entry (Input)	*The student will:*
	• demonstrate appropriate key commands to:
	  – open/create files/templates
	  – enter data
	    • number pad values
	    • keyboard—labels/formulae
	    • paste, import data
	    • replicate
	  – name files.
		identify application(s)
		
		collect/organize information/ resources
		
		design alternative formats/structures
		
		plan/execute activities
		
		critique results
		
		compare the effectiveness of various spreadsheet designs.

Concept	Specific Learner Expectations	Notes

Data Manipulation (Process)	*The student will:*
	● demonstrate appropriate key commands to:
	  – format
	  – create chart/graph (use graph tools)
	  – view
	  – modify
	    ● values
	    ● titles
	    ● labels
	    ● legends
	    ● fonts
	      – size, style
	    ● colour
	    ● pattern
	    ● grids
	    ● borders
	
	● merge data with other documents
	● incorporate macros
	  – edit data
	  – copy
	  – cut
	  – paste
	  – sort
	
	● sort data
	● calculate/recalculate
	● move through worksheet(s) efficiently by using appropriate cursor movement tools/commands
	  – split screen
	  – freeze
	● use help functions and references as appropriate.
		cells, rows, columns
		templates
		alignment
		number format ($, %, decimals)
		text format
		column widths/row heights
		borders/shading
		calculate/ recalculate
		
		set formulae
		
		merging skill is useful (see Word Processing III)
		
		moving data and formats
		copying data and formats
		clearing cells, rows and columns
		replacing cells, rows and columns
		insert/delete/sort
		
		assending, descending
		numeric
		alphabetic.

Worksheet Production (Output)	● demonstrate appropriate key commands to:
	  – save files
	  – utilize chart/graphing software capabilities
	  – customize and print worksheets
	    ● formats (portrait, landscape)
	    ● complete/sections
	    ● paper size
	    ● illustrated reports	

MODULE INF208: SPREADSHEET II (continued)

Concept	Specific Learner Expectations	Notes
Worksheet Production (Output)	*The student will:* ● demonstrate appropriate key commands to produce accurate, well-organized spreadsheets that emphasize the ability to predict/forecast using "what-if" scenarios.	incorporate "what-if" possibilities for: – travel expenses – problem-solving applications – election predictions, design/cost decision – feed analysis.
Workstation Management (Professionalism)	● review key features of the spreadsheet software package – capabilities – system requirements – platform options – command structure ● apply correct workstation position and routines that encourage: – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work ● demonstrate efficient and appropriate use of time and resources in terms of: – start-up procedures – organization of work area – closing procedures ● apply effective decision-making strategies in production assignments – plan activities – organize data/information/resources – consider alternatives – evaluate activities/results ● use related terminology accurately to describe basic processes, procedures and tools	index-reference material.

MODULE INF209 : DATABASE II

Level: Intermediate

Prerequisite: Keyboarding I (INF102)/Database I (INF105)

Corequisite:

Databases handle vast amounts of categorized data/information that is organized for storage into centrally located computer systems and can be accessed electronically through user computers. Hierarchical, relational and network models determine the relationship that exists among data files and the specific design determines how data/information is stored and retrieved. This module includes selected advanced database commands/functions that support the development of applied database skills and introduces graphic presentation to enhance report presentation.

Module Learner Expectations

The student will:

- create file, access file, enter data, edit, format and print reports from a database

- demonstrate efficient data entry, graph manipulation, report, time management and workstation techniques.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Data Entry (Input)	*The student will:*
	• demonstrate appropriate key commands to:
	  – open/create/access files, templates, macros
	  – enter data, key, copy formulae, scan, import
	  – name files
	  – format database
	  – compare "dbase" models
	    • hierarchical
	    • relational
	  – format file design parameters
	    • field, record.	

Data Manipulation (Process)	• demonstrate appropriate key commands to:
	  – format data
	  – use query language commands to access information
	  – form, list, query, report views
	  – create/import data, and use formulae
	  – use macros
	  – use report writers/format report specifications and layout
	  – create graphic data representations	

Concept	Specific Learner Expectations	Notes
Data Manipulation (Process) (continued)	*The student will:* – proofread, edit data – edit graphic representations • move through records efficiently by using appropriate cursor movement tools/commands • use help functions and references as appropriate.	data clarity (sequence, labels, titles, symbols function key command key/mouse –manual –reference texts –help menu.
Report Production (Output)	• demonstrate appropriate key commands to: – save files – preview records – print illustrated hard copy reports • demonstrate appropriate key commands to produce the following report: – database application using at least one graphic presentation.	
Workstation Management (Professionalism)	• review key features of the database software package – capabilities – system requirements – platform options – command structure • apply correct workstation position and routines that encourage: – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work • demonstrate efficient and appropriate use of time and resources in terms of: – start-up procedures – organization of work area – closing procedures • apply effective decision-making strategies in production assignments – plan activities – organize data/information/resources – consider alternatives – evaluate activities/results • use related terminology accurately to describe database processes, procedures and tools.	

MODULE INF210: PRESENTATION II

Level: Intermediate

Prerequisite: **Presentation I (INF106)**

Corequisite: **Design Process—Design Studies (Recommended)**

Through the use of desktop publishing software, which consists of integrated features involving, text, graphics, layout and formatting capability, it is possible to produce high-quality printed documents covering a wide spectrum of applications using personal computers and laser printers. This module provides an opportunity to develop desktop publishing and graphics skill in producing a variety of documents.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of designated advanced graphing and/or desktop publishing software commands and text/graphics management techniques to produce a desktop published document

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Text/Graphics Entry (Input)	*The student will:*
	- demonstrate appropriate key commands to:
	  – open/create files/templates
	  – enter text/graphics
	    • scan
	    • import file
	    • merge
	    • cut and paste
	  – name files.
		identify data input (text and graphics) sources
		
		access available typefaces, clip art.

Text/Graphics Manipulation (Process)	- demonstrate appropriate key commands to:
	  – format text
	    • graphics on screen ruler guides
	    • columns, borders, margins
	    • gutters, baselines
	    • alignment, hyphenation
	    • letter spacing, kerning, line spacing
	    • typefaces (font, style, size)
	    • graphics (placement, adjustment)
	    • indents and tabs
	    • linking text/graphics
		desktop applications:
		– personal documents
		– class assignments
		– signs, announcements, invitations, advertisements
		– brochures (single-, folded-page)

Concept	Specific Learner Expectations	Notes
Text/Graphics Manipulation (Process) (continued)	*The student will:* • linking text/graphics • book publication • graphics (TIFF, ESP, scanned, line art, halftones, gray scales, colour defaults, one-colour) – proofread, edit text (enhance, enlarge, crop, size scale) • move through document(s) efficiently by using appropriate cursor movement tools/commands • customize/edit graphics objects/files plan/create customized desktop templates: – grid-based – placeholder • use help functions and references as appropriate.	– school newsletter, newspaper, yearbook – community activities – business applications.
Document Production (Output)	• demonstrate appropriate key commands to: – save/export desktop publishing and graphics – files in a variety of formats – print documents • demonstrate appropriate key commands to produce documents in various desktop published and graphics forms.	
Workstation Use (Professionalism)	• review key features of the desktop software package: – capabilities – system requirements – platform options – command structure • assess the factors that affect desktop publishing layout: – budget considerations – time constraints – nature of audience/message – conditions of presentation • establish links/economies between typesetting/publishing and desktop publishing applications • apply correct workstation position and routines that encourage: – good health and (posture, positioning of hardware and furniture) – security for hardware, software supplies and personal work	compare a variety of: – desktop publishing – analyze/evaluate – distinguishing – characteristics evaluate software for integration capability with desktop publishing applications: – word processing – spreadsheet – database – chart graphics – presentation graphics document/operator skills aesthetic requirements

MODULE INF210: PRESENTATION II (continued)

Concept	Specific Learner Expectations	Notes

Workstation Use (Professionalism) (continued)	• demonstrate efficient and appropriate use of time and resources in terms of:
	  – start-up procedures
	  – organization of work area
	  – closing procedures
	
	• apply effective decision-making strategies in production assignments:
	  – plan activities
	  – organize data, information resources
	  – consider alternatives
	  – evaluate activities/results
	
	• use related terminology to describe basic processes, procedures, and tools.
		capability of equipment
		
		availability of typefaces, clip art.

MODULE INF211:   NOTEMAKING II

Level: Intermediate

Prerequisites: **Notemaking I (INF107)**
                    Workstation Operations (INF101; Recommended)
                    Keyboarding I (INF102; Recommended)

In this module students will learn an alphabetic notetaking system and practise transcribing notes on the keyboard. These competencies will support further study or many occupational applications.

Module Learner Expectations

The student will:

* take verbatim notes and transcribe notes accurately from verbal input.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Taking Notes (Input)	*The student will:* • use alphabetic notetaking system to write quickly and accurately to provide a verbatim record from verbal input • demonstrate ability to handwrite or keyboard notes quickly and briefly in a form that is easily reviewed and summarized without rewriting or expanding.	dictation at varying speeds keyboard notemaking, composing.
Improving Notes (Process)	• develop the ability to think, mentally summarize and notetake while reading, listening and observing.	
Using Notes (Output)	• transcribe notes accurately • organize notes, prepare outlines, research topics, synthesize ideas and prepare report on a relevant topic.	

MODULE INF212: NOTEMAKING III

Level: Intermediate

Prerequisite: Notemaking II (INF211)

Corequisite: None

In this module students increase their speed and efficiency in using an alphabetic notetaking system, improving listening, composition and editing skills through writing and transcribing the notes on the keyboard. Transcribed notes will include verbatim and summary/outlines notes.

Module Learner Expectations

The student will:

- take verbatim notes, prepare summary notes and transcribe notes accurately from verbal input.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Taking Notes (Input)	*The student will:* • demonstrate increasingly rapid, accurate notetaking on frequently used words and phrases from direct sources or tape. • increase notetaking competency by taking verbatim notes from a variety of sources – lectures/speeches – short letters/reports – meetings – messages.	handwritten keyboard.
Improving Notes (Process)	• practise reviewing notes and summarizing key points • practise editing and improving notes and reports in terms of: – word usage – phrasing – spelling – punctuation • use appropriate reference materials to check transcripts.	.

Concept	Specific Learner Expectations	Notes

Using Notes (Output)	*The student will:*
	● prepare verbal and print summaries of notes
	● demonstrate increasingly rapid, accurate transcription of notes in:
	  – verbatim form
	  – summary form
	● apply correct formatting skills to the production of notes and transcripts.	

MODULE INF213: RECORDS I

Level: **Intermediate**

Prerequisite: **Database I (INF205)**

Individuals and organizations need recorded information that is accurate, accessible and in the right format in order to make appropriate decisions. This module provides an opportunity to develop basic records management skills for a records system (manual or electronic) using alphabetical coding procedures.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate procedures for the maintenance of a records management system that codes data alphabetically

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Create Records/Files (Input)	*The student will:*
	• demonstrate appropriate procedures to open/create a record system
	  – establish goals
	  – assess equipment
	    • manual
	    • electronic
	  – establish purpose
	    • administration
	    • fiscal
	    • legal
	    • historical
	  – classify operation
	    • use
	      - transaction
	      - reference
	    • place
	      - internal
	      - external
	    • value
	      - vital
	      - important
	      - useful
	      - non-essential
	  – create records/files/templates
	    • code alphabetical storage rules
	    • cross reference
	    • index
		local filing and records management system currently in use
		
		the purpose of keeping records, establishing filing/record storage systems
		
		equipment and procedures required for establishing and maintaining filing systems
		
		job/career opportunities
		
		record management program features:
		  – information (accurate, timely, confidential, secure)
		  – cost

Concept	Specific Learner Expectations	Notes
Create Records/Files (Input) (continued)	*The student will:* – enter data • key • script.	– efficient system (establish, maintain) – user (training, controlling) sources of data, information, records, files the life cycle of records an illustrated system flowchart: – input – process – output – feedback – control provide examples of indexing, coding, cross referencing explain what an alphabetic card file is, when it is used, advantages and disadvantages.
Use Maintain (Process)	• demonstrate appropriate procedures to process data/information for a records management system – format data/information • files • cards – edit information/data • editing for accuracy/spelling • updating • purging • move through records/file system by: – sorting – selecting – maintaining – disposing • use help references as appropriate: – ARMA standard rules for consistency.	students prepare manual for essential information.

Concept	Specific Learner Expectations	Notes

Retrieve and Distribute (Output)	*The student will:*
	
	● demonstrate appropriate procedures to:
	  – retrieve and distribute files/records
	
	● demonstrate the appropriate procedures to complete a records management applications effectively
	  – control
	  – feedback
	  – critique results of application practice.	

Workstation Management (Professionalism)	● review key features of the records management database software package:
	  – capabilities
	  – system requirements
	  – platform options
	  – command structure
	
	● apply correct workstation position and routines that encourage:
	  – good health and safety (posture, positioning of hardware and furniture)
	  – security for hardware, software, supplies and personal work
	
	● demonstrate efficient and appropriate use of time and resources in terms of:
	  – start-up procedures
	  – organization of work area
	  – closing procedures
	
	● apply effective decision-making strategies in production assignments:
	  – plan activities
	  – organize data/information/resources
	  – consider alternatives
	  – evaluate activities/results
	
	● use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF214: ELECTRONIC OFFICE I

Level: **Intermediate**

Prerequisites: **Keyboarding II (INF202)**
Word Processing II (INF204)

The electronic office has access to multimedia technologies that enhance communication and support productivity. In this module students will learn how the office environment, processes and protocols relate to quality management, productivity and efficient communication.

Module Learner Expectations

The student will:

- demonstrate processes and protocols used within electronic offices to ensure efficient management of resources and communication with people and information

- demonstrate efficient text entry, document management and workstation techniques.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Office Environment (Input)	*The student will:*
	• investigate how various business offices are organized with respect to:
	  – organizational structure
	  – priorities/philosophy
	  – administrative structure
	• describe how the organization handles decision making and delegation responsibilities
	• identify the components of a work area in terms of:
	  – hardware
	  – software
	  – telecommunications
	  – resources/references
	  – ergonomics.
		select from offices of:
		– various sizes (e.g., home business, large business, service club, community organization, corporation)
		– various sectors of the economy (e.g., oil, service industry, real estate, insurance, health industry, auto dealership).

Office Procedures (Process)	• review how the office supports a commitment to quality management:
	  – focus on customer
	  – accuracy, completeness, simplicity
	  – using references/research
	• identify and practise effective strategies to avoid and handle conflict appropriately	

Concept	Specific Learner Expectations	Notes
Office Procedures (Process) (continued)	*The student will:* • identify and assess strategies that increase personal productivity in terms of: – time and work management – setting priorities – resource management • identify routines and protocols used to handle the following office functions: – purchasing – receiving.	
Managing Communications (Output)	• outline and demonstrate basic strategies for managing communications and decision making within the office • people – visitors and clients – telephone/telecommunications/facsimile • documents (income/internal/outgoing) – production – distribution – tracking.	
Workstation Management (Professionalism)	• apply correct workstation position and routines that encourage: – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work • demonstrate efficient and appropriate use of time and resources in terms of: – start-up procedures – organization of work area – closing procedures • apply effective decision-making strategies in production assignments: – plan activities – organize data/information/resources – consider alternatives – evaluate activities/results • use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF215: GENERAL APPLICATIONS

Level: Intermediate

Prerequisite: **Word Processing I (INF103)**

Corequisites: **Word Processing II (INF204), Keyboarding II (INF202; Recommended)**

In any office setting a variety of activities (processes and procedures) occur daily. In this module students have an opportunity to develop basic skill and apply this knowledge in a meaningful context.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of hardware and software for communication applications

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
	The student will: ●	
	●	

Concept	Specific Learner Expectations	Notes
	The student will: •	
	•	

MODULE INF216: EMERGING COMPUTER TECHNOLOGIES I

Level: **Intermediate**

Prerequisite: **Keyboarding I (INF101)**

This module offers an opportunity to explore and experience futuristic technological innovations by developing basic skills and increased understanding of the emerging technological environments. In this module students have an opportunity to develop basic skill in sound-enhanced computer generated graphics applications by utilizing/modifying graphics software or by using computer programming techniques to control graphics animation activities.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of designated sound and animation software commands and programs to produce animation and sound applications

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
	The student will: •	
	•	

Concept	Specific Learner Expectations	Notes
	The student will: ●	
	●	

MODULE INF217: PROGRAMMING II

Level: **Intermediate**

Prerequisite: **Programming I (INF108)**

Programmers design algorithms and use either a procedure-oriented or object-oriented language structure to code instructions for specific and unique computer tasks. In this module students have an opportunity to increase programming skills by designing and generating programming code to handle decision-making and iteration processes.

Module Learner Expectations

The student will:

- create an algorithm to solve a programming application

- create/execute a structured computer program involving decision-making and iteration processes.

Specific Learner Expectations—Part A (Procedure-Oriented)

Concept	Specific Learner Expectations	Notes
Algorithms	*The student will:* • identify/describe the problem • list each step required to solve the problem • develop the appropriate logic to achieve the solution • apply structured programming constructs to create a schematic/flowchart/pseudocode indicating how the solution will be achieved (IPO/HIPO).	

Computer Language Syntax	• use constants, variables, data structures, operands
	• use reserved words, commands, statements, operators
	• input data using reserved words:
	  – embedded/read/enter data
	• process data:
	  – calculations/manipulations/decision control/branching/ looping
	• output data using reserved words:
	  – text/data/graphics.	

Concept	Specific Learner Expectations	Notes

Structured Computer Programming Applications	*The student will:*
	● access appropriate computer language resource support
	● examine decision-making processes and conditions when used
	● apply programming syntax to decision-making processes:
	  – decision control (conditional statements)
	  – branching
	  – looping
	● code simple decision-making commands involving a variety of conditions
	● discuss and use nested conditional statements
	● examine iterative structures and conditions when used
	● apply programming syntax to iterative processes:
	  – repetition
	  – iteration
	  – looping
	● code simple repetitive commands involving a variety of conditions, including nested repetitive structures (counting, specific conditions, incrementing, summation, boolean relational operators)
	● discuss appropriate use of unconditional branching
	● identify problem/develop algorithm
	● design output format
	● key/code the instructions
	● test run program
	● debug/edit program
	● execute program
	● document program
	● assess activities/results.	

Terminology	● use appropriate computer programming terminology.	

MODULE INF217: PROGRAMMING II (continued)

Specific Learner Expectations—Part B (Object-Oriented)

Concept	Specific Learner Expectations	Notes
Algorithms/Classes	*The student will:* • identify/describe the problem • list each step required to solve the problem • develop the appropriate logic to achieve the solution • apply structured programming constructs to create a schematic/flowchart pseudocode indicating how the solution will be achieved (IPO/HIPO).	

Computer Language Syntax	• use constants, variables, data structures, operands
	• use reserved words, commands, statements, operators, or predefined classes
	• input data using reserved words or predefined classes:
	  – embedded/read/enter data
	• process data:
	  – calculations/manipulations/decision control/ branching/ looping
	• output data using reserved words or predefined classes:
	  – text/data/graphics.	

Structured Computer Programming Applications	• access appropriate computer language resource support
	• examine decision-making processes and conditions when used
	• apply programming syntax to decision-making processes:
	  – decision control (conditional statements)
	  – branching
	  – looping
	• code simple decision-making commands involving a variety of conditions
	• discuss and use nested conditional statements
	• examine iterative structures and conditions when used	

Concept	Specific Learner Expectations	Notes

Structured Computer Programming Applications (continued)	*The student will:*
	● apply programming syntax to iterative processes:
	  – repetition
	  – iteration
	  – looping
	● code simple repetitive commands involving a variety of conditions, including nested repetitive structures (counting, specific conditions, incrementing, summation, boolean relational operators)
	● discuss appropriate use of unconditional branching
	● identify problem/develop algorithm
	● design output format
	● key/code the instructions
	● test run program
	● debug/edit program
	● execute program
	● document program
	● assess activities/results.	

Terminology	● use appropriate computer programming terminology.	

MODULE INF218:   **PROGRAMMING III**

Level: **Intermediate**

Prerequisites: **Programming II (INF217)**

Programmers design algorithms and use either a procedure-oriented or object-oriented language structure to code instructions for specific and unique computer tasks. In this module students have an opportunity to increase programming skills by using sub-routines and functions in their own programs.

Module Learner Expectations

The student will:

- modify/create an algorithm to solve a programming application

- create a structured computer program that involves sub-routines and functions.

Specific Learner Expectations—Part A (Procedure-Oriented)

Concept	Specific Learner Expectations	Notes
Algorithms	*The student will:* - modify an existing algorithm(s) - identify/describe the problem - list each step required to solve the problem - develop the appropriate logic to achieve the solution - apply structured programming constructs to modify/create a schematic/flowchart/ pseudocode indicating how the solution will be achieved (IPO/HIPO).	

Computer Language Syntax	- use constants, variables, data structures, operands
	- use reserved words, commands, statements, operators, subroutines, predefined and user defined functions
	- input data using reserved words:
	  – embedded/read/enter data
	- process data:
	  – calculations/manipulations/decision control/branching/looping/sub-routines/ functions
	- edit/modify existing code
	- output/link program segments/program using reserved words:
	  – text/data/graphics.	

Concept	Specific Learner Expectations	Notes

Structured Computer Program Applications	*The student will:*
	● access appropriate computer language resource support
	● examine pre-coded instructions used as templates:
	  – why are they used (reduces coding/ debugging)
	  – when used (conditions)
	● code simple instructions to utilize templates/ library routines
	● recode existing programs treating text/graphics as sub-programs
	● discuss use of procedures/sub-routines/functions (repeating patterns of code)
	● describe purpose/use of sub-programs/ predefined functions
	● utilize sub-routines/functions in program segments
	● access/create program segments utilizing complex procedures/functions:
	  – use parameters/operators to customize repeating code patterns
	  – one- and two-way parameter passing
	  – nested procedures/functions
	  – scope charts
	  – local/global variables
	● apply sub-routines/functions in a program
	● develop algorithm
	● design output format
	● key/code the instructions
	● test run program
	● debug/edit program
	● execute program
	● document program
	● assess activities/results.	

Terminology	● use appropriate computer programming terminology.	

Specific Learner Expectations—Part B (Object -Oriented)

Concept	Specific Learner Expectations	Notes
Algorithms/Classes	*The student will:* • modify an existing algorithm(s) • identify/describe the problem • list each step required to solve the problem • develop the appropriate logic to achieve the solution • apply structured programming constructs to modify/create a schematic/flowchart/ pseudocode indicating how the solution will be achieved (IPO/HIPO).	
Computer Language Syntax	• use constants, variables, data structures, operands • use reserved words, commands, statements, operators, sub-routines, predefined and user defined functions • input data using reserved words: – embedded/read/enter data • process data: – calculations/manipulations/decision control/branching/looping/sub-routines/ functions • edit/modify existing code • output/link program segments/program using reserved words: – text/data/graphics.	
Structured Computer Programming Applications	• access appropriate computer language resource support • examine pre-coded instructions used as templates: – why are they used (reduces coding/debugging) – when used (conditions) • code simple instructions to utilize templates/library routines/library classes • recode existing programs treating text/graphics as sub-programs • discuss use of procedures/sub-routines/functions (repeating patterns of code)	

MODULE INF218: PROGRAMMING III (continued)

Concept	Specific Learner Expectations	Notes

Structured Computer Programming Applications (continued)	*The student will:*
	 • describe purpose/use of sub-programs/predefined functions/predefined classes
	 • utilize sub-routines/functions in program segments
	 • access/create program segments utilizing complex procedures/functions:
	    – use parameters/operators to customize repeating code patterns
	    – one- and two-way parameter passing
	    – nested procedures/functions
	    – scope charts
	    – local/global variables
	 • apply sub-routines/functions in a program
	 • develop algorithm
	 • design output format
	 • key/code the instructions
	 • test run program
	 • debug/edit program
	 • execute program
	 • document program
	 • assess activities/results.	

Terminology	• use appropriate computer programming terminology.	

MODULE INF219: PROGRAMMING IV

Level: Intermediate

Prerequisite: Programming III (INF218)

Programmers design algorithms and use either a procedure-oriented or object-oriented language structure to code instructions for specific and unique computer tasks. In this module students have an opportunity to increase programming skills by developing and using derived data types.

Module Learner Expectations

The student will:

- modify/create an algorithm/classes to solve a programming application

- create a structured computer program that contains derived data types.

Specific Learner Expectations—Part A (Procedure-Oriented)

Concept	Specific Learner Expectations	Notes
Algorithms	*The student will:* • modify an existing algorithm(s) • identify/describe the problem • list each step required to solve the problem/list the required components of the data structure • develop the appropriate logic to achieve the solution • apply structured programming constructs to modify/create a schematic/flowchart/ pseudocode indicating how the solution will be achieved (IPO/HIPO).	

Computer Language Syntax	• use constants, variables, data structures, operands
	• use reserved words, commands, statements, operators, sub-routines, functions
	• use single and multiple dimensioned arrays, character strings, records and sets
	• input data using reserved words:
	  – embed/read/enter data
	  – create/assign values to derived data types
	• process data:
	  – calculations/manipulations/decision control/ branching/looping/sub-routines/ functions	

Concept	Specific Learner Expectations	Notes
Computer Language Syntax (continued)	*The student will:* ● edit/modify existing code ● output/link program segments/programs using reserved words: – text/data/graphics.	

Structured Computer Programming Applications	● access appropriate computer language resource support
	● describe purpose/use of derived data types
	● discuss the need for/advantages of derived data types
	● utilize derived data types in program segments
	● access/create program segments utilizing derived data types
	  – single/multiple dimensioned arrays
	  – character strings
	  – records/sets
	● create program segments that access data stored in derived data types
	● create program segments that utilize predefined functions/procedures to process information stored in derived data types
	● apply derived types in a program
	● develop algorithm
	● design output format
	● key/code the instructions
	● test run program
	● debug/edit program
	● execute program
	● document program
	● assess activities/results.	

Terminology	● use appropriate computer programming terminology.	

Specific Learner Expectations—Part B (Object -Oriented)

Concept	Specific Learner Expectations	Notes
Algorithms/Classes	*The student will:* • modify an existing algorithm(s) • identify/describe the problem • list each step required to solve the problem/list the required components of the data structure • develop the appropriate logic/data components required to achieve the solution • apply structured programming constructs to modify/create a schematic/flowchart/ pseudocode indicating how the solution will be achieved (IPO/HIPO).	

Computer Language Syntax	• use constants, variables, data structures, operands
	• use reserved words, commands, statements, operators, sub-routines, functions
	• use single and multiple dimensioned arrays, character strings, records/sets/structures/ pointers/classes
	• input data using reserved words or predefined classes:
	  – embed/read/enter data
	  – create/assign values/operations to derived data types
	• process data:
	  – calculations/manipulations/decision control/branching/ looping
	  – sub-routines/functions/classes/objects
	  – edit/modify existing code
	• output/link program
	• segments/programs using reserved words or predefined classes:
	  – text/data/graphics.	

Structured Computer Programming	• access appropriate computer language resource support • describe purpose/use of derived data types • discuss the need for/advantages of derived data types • utilize derived data types in program segments	

Concept	Specific Learner Expectations	Notes
Structured Computer Programming (continued)	*The student will:* ● access/create program segments utilizing derived data types ● single/multiple dimensioned arrays ● character strings ● records/sets/structures/pointers/classes ● create program segments that access data/ members of derived data types ● create program segment that utilize predefined/functions/ procedures and user defined functions/procedures to process information stored in derived data types ● apply derived types in a program ● develop algorithm/classes ● design output format ● key/code the instructions ● test run program ● debug/edit program ● execute program ● document program ● assess activities/results.	
Terminology	● use appropriate computer programming terminology.	

MODULE INF220: PROGRAMMING V

Level: Intermediate

Prerequisite: **Programming IV (INF219)**

Programmers design algorithms and use either a procedure-oriented or object-oriented language structure to code instructions for specific and unique computer tasks. In this module students will have an opportunity to increase programming skills by working with advanced operations on derived data types.

Module Learner Expectations

The student will:

- modify/create an algorithm/classes to solve a programming application

- create a structured computer program that contains derived data types.

Specific Learner Expectations—Part A (Procedure-Oriented)

Concept	Specific Learner Expectations	Notes
Algorithms	*The student will:* • modify existing/develop new algorithms • identify/describe the problem • list each step required to solve the problem/list the required components of the data structure • develop the appropriate logic/data components required to achieve the solution • develop the appropriate methods of accessing data in derived data types • compare iterative and recursive routines • measure the efficiency of comparable routines • apply structured programming constructs to modify/create a schematic/flowchart/ pseudocode indicating how the solution will be achieved (IPO/HIPO).	

Computer Language Syntax	• use constants, variables, data structures, operands
	• use reserved words, commands, statements, operators, sub-routines, functions
	• use language specific derived data types
	• input data using reserved words:
	  – embed/read/enter data
	  – create/assign values to derived data types	

MODULE INF220: PROGRAMMING V (continued)

Concept	Specific Learner Expectations	Notes
Computer Language Syntax (continued)	*the student will:* • process data: – calculations/manipulations/decision control/ branching/looping/sub-routines/functions • edit/modify/existing code • output/link program segments/programs using reserved words: – text/data/graphics.	
Structured Computer Programming Applications	• access appropriate computer language resource support • describe purpose/use of derived data types • discuss the need for/advantages of derived data types • utilize derived data types in program segments • utilize/develop/modify iterative and recursive routines to sort/search/merge members of derived data types • identify situations that lend themselves to specific routines • apply appropriate operations on derived data types in a program • develop algorithm • design output format • key/code the instructions • test run program • debug/edit program • execute program • document program • assess activities/results.	
Terminology	• use appropriate computer programming terminology.	

Specific Learner Expectations—Part B (Object -Oriented)

Concept	Specific Learner Expectations	Notes
Algorithms/Classes	*The student will:* • modify existing/develop new algorithms/classes • identify/describe the problem • list each step required to solve the problem/list the required components of the data structure • develop the appropriate logic/data components required to achieve the solution • develop the appropriate methods of accessing data/methods in derived data types • compare iterative and recursive routines/structures • measure the efficiency of comparable routines/structures • apply structured programming constructs to modify/create a schematic/flowchart/ pseudocode indicating how the solution will be achieved (IPO/HIPO).	

Computer Language Syntax	• use constants, variables, data structures, operands
	 • use reserved words, commands, statements, operators, sub-routines, functions
	 • use language specific derived data types
	 • input data using reserved words or predefined classes:
	   – embed/read/enter data
	   – create/assign values/operations to derived data types
	 • process data:
	   – calculations/manipulations/decision control/branching/looping/sub-routines/ functions/classes/objects/methods
	 • edit/modify existing code
	 • output/link program segments/programs using reserved words or predefined classes:
	   – test/data/graphics.	

Concept	Specific Learner Expectations	Notes
Structured Computer Programming	*The student will:* • access appropriate computer language resource support • describe purpose/use of derived data types • discuss the need for/advantages of derived data types • utilize derived data types in program segments • utilize/develop program segments that access elements of derived data types using member/non-member functions • utilize/develop program segments that develop new classes from base classes/add new data/methods to base classes/ redefine the way in which inherited class member functions operate/inherit characteristics from multiple classes • identify situations that lend themselves to specific routines/structures • apply appropriate operations on derived data types in a program • develop algorithm/classes • design output format • key/code the instructions • test run program • debug/edit program • execute program • document program • assess activities/results.	
Terminology	• use appropriate computer programming terminology.	

MODULE INF301:   WIDE AREA NETWORKS

Level: Advanced

Prerequisite: **Local Area Networks (INF201)**

A communications network extends beyond geographic boundaries and is accessible via communication channels consisting of telephone lines, fiber optics, microwaves and satellites. Computer system hardware configurations of this nature support rapid access to information whether stored locally or in distant locations. These computer information processing systems (system life cycle, hardware configurations, software applications) control, direct and sequence the operating phases to ensure that the essential communication functions are maintained in order to meet the user needs. This module is an introduction to wide area network computer systems (hardware and peripheral configurations, interface protocols, telecommunication equipment and data transmission characteristics).

Module Learner Expectations

The student will:

● determine WAN computer hardware and software specifications

● access information via WAN

● demonstrate WAN computer system management techniques.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
WAN Procedures (Input)	*The student will:* ● demonstrate appropriate key commands to: – activate the WAN computer system – access menus and enter appropriate input text, data, codes ● determine size restrictions and extensions ● describe and provide examples of major types of WANs: – local – national – international ● establish system policies and procedures: – access – security – integrity – file/disk management.	identify and compare network (protocol) system software evaluate interface cards (NIC), servers, cables for compatibility with the operating system.

Concept	Specific Learner Expectations	Notes

WAN Activities (Process)	*The student will:*
	
	● use network system architecture, topology efficiently
	
	● update network access as required:
	  – polling
	  – token passing
	  – CSMA/CD
	
	● demonstrate appropriate key commands to:
	  – locate, access, update, edit, format, purge system files
	
	● move through system file(s) and documents efficiently by using appropriate cursor movement tools/commands
	
	● create a schematic/diagram of a typical teleprocessing configuration
	
	● develop network procedures for:
	  – user access and passwords
	  – set paths and perform updates
	  – system and data security
	
	● define procedures for file management:
	  – internal (floppies, files from server, sub-directories, physical drives, logical drives for copy protected and single user programs)
	  – public drives
	  – DOS drives
	  – search drives
	
	● determine the most appropriate configurations for various scenarios:
	  – RAM
	  – hard drive
	  – laser/compact disk
	  – processor
	  – fault tolerance
	  – parallel processing
	  – parallel hard drives
	  – dedicated server/non-dedicated server
	
	● select the most appropriate procedures for system:
	  – maintenance
	  – backup
	  – failures
	
	● define the functions of network shell (copying selected drivers, linking programs, establishing connections for user and server, assigning user rights and names [passwords])
		"hands-on" opportunities with the:
		  – input/access device
		  – operating system
		  – peripheral components
		  – monitor/printer
		
		use systems approach to problem solving
		
		make decisions based on resources, time constraints, projections of cost, hardware, software considerations
		
		use the most appropriate type of connections/media to design various network (cables, optic fiber)
		
		describe common WAN applications for the home, education, business, industry environments
		
		research and report on future computer system network and technological trends
		
		identify developing career opportunities.

Concept	Specific Learner Expectations	Notes

WAN Activities (Process) (continued)	*The student will:*
	
	• define the steps required to configure the system when installing a network
	
	• identify the network manager's activities and responsibilities
	
	• develop a system life cycle report that identifies:
	  – system requirements (feasibility study)
	  – alternative possibilities (recommendation supported by data)
	  – design (hardware, software, people, procedures, data)
	  – implementation (installation, testing, monitoring, evaluating)
	
	• prepare a flow chart of:
	  – a systems life cycle
	  – systems functions (input, processing, output, storage, feedback)
	
	• address societal issues
	  – network access
	  – data/information
	  – integrity
	  – security
	  – redundancy
	  – accuracy
	  – impact of CD-ROMS
	  – surveillance systems/privacy
	
	• use computer system and WAN help functions and references as required
		student choice as to specific system application.

Applications (Output)	• demonstrate appropriate key commands to:
	  – save files
	  – print documents
	
	• demonstrate appropriate key commands to produce status reports, network instructions, document updates, information reports, data lists
	
	• cooperate with users
	
	• provide documentation for system access.	

Concept	Specific Learner Expectations	Notes

Workstation Use (Professionalism)	*The student will:*
	
	● review key WAN operating system features and capabilities
	  – system requirements
	  – platform options
	  – command structure
	● identify WAN computer system:
	  – parameter definition
	  – characteristics
	  – components
	  – access alternatives
	  – communication links
	  – network topologies
	  – services
	  – uses/users
	● address computer network systems:
	  – public and private
	  – telecommunication networks and examples
	  – tradeoff benefits/networking costs
	● distributed processing
	  – electronic bulletin boards (private, public)
	  – information utilities
	  – electronic mail (send, receive)
	● characteristics of various types of transmission media:
	  – open/paired wire
	  – coaxial cable
	  – fiber optics
	  – radio
	  – satellite
	● transmission channels:
	  – attenuation
	  – repeaters
	  – alternating current
	  – bandwidth
	  – frequency
	  – modulation
	  – multiplexing
	● apply correct workstation position and routines that encourage:
	  – good health and safety (posture, positioning of hardware and furniture)
	  – security for hardware, software, supplies and personal work
		the advantages/ disadvantages (centralized versus decentralized processing)
		
		identify range of services available and companies involved

Concept	Specific Learner Expectations	Notes
Workstation Use (Professionalism) (continued)	*The student will:* ● demonstrate efficient and appropriate use of time and resources in terms of: – start-up procedures – organization of work area – closing procedures ● apply effective decision-making strategies in production assignments: – plan activities – organize data, information, resources – consider alternatives – evaluate activities/results ● determine how computer systems assist communicating and decision-making processes: – database management systems – computer information systems – management information systems – numerical control systems – data communication systems – CAD, CAM, CAI, CAT, EDP, EFT ● identify how computer hardware is designed to handle different problems: – mainframe – minicomputer – microcomputer – laptop – embedded microprocessors – fault-tolerant computers ● discuss how computer processing power can be maximized: – real-time processing – teleprocessing – multiprocessing – distributed processing – multiprogramming and time-sharing ● use related network and computer system terminology to describe basic processes, procedures and tools.	

MODULE INF302:   KEYBOARDING IV

Level: Advanced

Prerequisite: Keyboarding III (INF203)

Corequisite: Word Processing I (INF103; Recommended)

This module expands keyboarding and computer use and software applications to occupational entry level. Students will demonstrate greater efficiency in accurate text and data entry under pressure of time with all alphabet, number and punctuation keys and selected symbol and function keys. Text entry will include draft as well as straight copy material.

Module Learner Expectations and Assessment Standards

Module Learner Expectations	Assessment Standards	Emphasis (%)
The student will:	*Assessment will be based on:*	
• enter text (straight copy and draft, edited) accurately at a keystroke rate suitable for occupational use	• a series of five, 5-minute straight copy timings (SI 1.1 to 1.3) over a period of no more than five consecutive class periods. The student will touch keystroke at a minimum of 60 words per minute with no more than one uncorrected error on at least three occasions. **Refer to assessment instrument: Keyboarding—Level III**	35–50
• enter data accurately at a rate suitable for personal use	• a series of five, 3-minute timings of data (maximum 6 digits) over a period of no more than five consecutive class periods. The student will enter data at a minimum of 150 characters per minute with no more than one uncorrected error on at least three occasions. **Refer to assessment instrument: Data Entry—Level III**	10–15
• demonstrate efficient text entry, document management and workstation techniques	• observations over the last quarter of the instructional period, during timed and untimed work. Students will consistently demonstrate touch keyboarding of alphanumeric keys and appropriate workstation techniques and behaviours as outlined in assessment instrument: **Workstation Techniques—Level III**.	25–35

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Text Entry (Input)	*The student will:* • demonstrate increasingly rapid, accurate touch keystroking on straight and draft (edited) copy of – alphanumeric keys – all punctuation keys	

Concept	Specific Learner Expectations	Notes
Text Entry (Input) (continued)	*The student will:* – service keys (enter, shift, delete, backspace, tab) • use function and cursor movement key efficiently • demonstrate correct keystroking technique – enter text using designated fingers – maintain home-row anchor position – demonstrate correct posture (hand, arm, body) • proofread and edit text (screen and hard copy) to ensure text is without error • analyze errors and initiate remediation as appropriate for – spelling, shifting, punctuation and spacing errors – transposed, repeated, omitted letters.	develop speed and accuracy at the phrase, sentence and short paragraph level using short, repetitive timings (.5 to 1 minute) with straight copy text of varying SI. (1.2–1.6) draft copy should include basic spacing, spelling, punctuation and spacing errors (no more than 1 error per every 10 words).
Data Entry	• demonstrate rapid, accurate data entry on keyboard/number pad – using designated fingers – maintaining anchor position.	
Document Management (Process/Output)	• use appropriate document management procedures and key commands to enter, edit, format, save, recall, print and delete documents • format documents as required including correct line lengths, vertical spacing, and tab settings.	
Workstation Use (Professionalism)	• apply correct workstation position and routines that encourage: – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work • demonstrate efficient and appropriate use of time and resources in terms of: – start-up procedures – organization of work area – closing procedures.	

MODULE INF303:   KEYBOARDING V

Level: Advanced

Prerequisite: Keyboarding IV (INF302)

Corequisite   Word Processing I (INF103; Recommended)

This module expands keyboarding and computer use and software applications to occupational entry
level. Students will be able to edit and draft text and data accurately and rapidly using all alphabet,
number and punctuation keys and selected symbol and function keys.

Module Learner Expectations and Assessment Standards

Module Learner Expectations	Assessment Standards	Emphasis (%)
The student will: • enter text (straight copy and draft, edited) accurately at a keystroke rate suitable for occupational use	*Assessment will be based on:* • a series of five, 5-minute straight copy timings (SI 1.2 to 1.4) over a period of no more than five consecutive class periods. The student will touch keystroke at a minimum of 70 words per minute with no more than one uncorrected error on at least three occasions. **Refer to assessment instrument: Keyboarding—Level III**	40–50
• enter data accurately at a rate suitable for personal use	• a series of five, 3-minute timings of data (maximum 6 digits) over a period of no more than five consecutive class periods. The student will enter data at a minimum of 180 characters per minute with no uncorrected errors on at least three occasions. **Refer to assessment instrument: Data Entry—Level III**	10–15
• demonstrate efficient text entry, document management and workstation techniques	• observations over the last quarter of the instructional period, during timed and untimed work. Students will consistently demonstrate touch keyboarding of all keys and appropriate workstation techniques and behaviours as outlined in assessment instrument: **Workstation Techniques—Level III**.	20–35

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Text Entry (Input)	*The student will:*
	
	 • demonstrate increasingly rapid, accurate touch keystroking on straight and draft copy (edited) of
	   – alphanumeric keys
	   – all punctuation keys
	   – service keys
		
		 enter, shift, delete, backspace, tab

Concept	Specific Learner Expectations	Notes

Text Entry (Input) (continued)	*The student will:*
	• use function and cursor movement keys efficiently
	• demonstrate correct keystroking technique
	  – enter text using designated fingers
	  – maintain home-row anchor position
	  – demonstrate correct posture (hand, arm, body)
	• proofread and edit text (screen and hard copy) to ensure text is without error
	• analyze errors and initiate remediation as appropriate for
	  – spelling, shifting, punctuation and spacing errors
	  – transposed, repeated, omitted letters.
		develop speed and accuracy at the phrase, sentence and short paragraph level using short, repetitive timings (.5 to 1 minute) with straight copy text of varying SI. (1.2–1.6)
		
		draft copy should include basic spacing, spelling, punctuation and spacing errors (no more than 1 error per every 10 words).

Data Entry	• demonstrate rapid, accurate data entry on keyboard/number pad
	  – using designated fingers
	  – maintaining anchor position.	

Document Management (Processor/Output)	• use appropriate document management procedures and key commands to enter, edit, format, save, recall, print and delete documents • format documents as required including correct line lengths, vertical spacing and tab settings.	

Workstation Use (Professionalism)	• apply correct workstation position and routines that encourage:
	  – good health and safety (posture, positioning of hardware and furniture)
	  – security for hardware, software, supplies and personal work
	• demonstrate efficient and appropriate use of time and resources in terms of:
	  – start-up procedures
	  – organization of work area
	  – closing procedures.	

MODULE INF304:   WORD PROCESSING III

Level: Advanced

Prerequisite: Word Processing II (INF204)

Corequisite: Keyboarding II (INF202)

This module presents advanced level word-processing functions and commands for the entry, formatting, editing and printing of letters, reports and tables.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of designated word-processing software commands and document management techniques to produce mailable word-processing documents

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Text Entry (Input)	*The student will:*
	- demonstrate appropriate key commands to
	  – open/create files
	    • import
	    • scan
	  – enter text
	  – name files.	

Text Manipulation (Process)	- demonstrate appropriate key commands to
	  – plan and format text
	    • rulers/margins/tabs
	    • spacing/layout
	    • text boxes
	    • font styles/sizes
	    • footers/headers
	    • postscripts and subscripts
	  – insert graphics
	    • import
	    • design
	  – establish and use libraries
	  – edit text
	    • move (cut and paste)
	    • spell check and thesaurus
	    • word division
	    • search and replace
	  – merge and sort text
	  – design and use macros
	  – create and use boilerplates and templates
		arrows, select, undo, goto.

Concept	Specific Learner Expectations	Notes
Text Manipulation Process (continued)	*The student will:* ● move through document(s) efficiently by using appropriate cursor movement tools/commands ● use help functions and references as appropriate.	.

Document Production (Output)	● demonstrate appropriate key commands to:
	– save files (alternative formats)
	– print documents
	● replicate, convert and append files
	● print documents (alternative formats)
	● print templates
	● demonstrate appropriate key commands to produce the following documents in mailable form
	– reports
	  ● headings/subheading
	  ● references (footnotes, end notes, bibliography)
	  ● headers/footers
	  ● title page
	– personal and business letters
	  ● letter parts (date, inside address, salutations, complimentary closing, name/title, references)
	  ● letter styles
	– tables (single/multi-column)
	  ● headings .
	  ● borders
	  ● rulers/tabs.
		mailable form: accurate and correctly formatted
		
		use software table functions if available.

Workstation Management (Professionalism)	● compare at least two word-processing software packages in terms of: – capabilities – system requirements – platform options – command structure ● apply correct workstation position and routines that encourage: – good health and safety (posture, positioning of hardware and furniture) security for hardware, software, supples and personal work	

MODULE INF304: WORD PROCESSING III (continued)

Concept	Specific Learner Expectations	Notes

Workstation Management (Professionalism) (continued)	*The student will:*
	● demonstrate efficient and appropriate use of time and resources in terms of:
	  – start-up procedures
	  – organization of work area
	  – closing procedures
	● apply effective decision-making strategies in production assignments
	  – plan activities
	  – organize data/information/resources
	  – consider alternatives
	  – evaluate activities/results
	● use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF305:   WORD PROCESSING IV

Level: Advanced

Prerequisite: Word Processing III (INF304)

Corequisite: Keyboarding III (INF203)

This module will build students' expertise in computer workstation procedures and increase the rate at which they produce accurate, correctly formatted word-processing applications involving correspondence, reports and tables.

Module Learner Expectations

Module Learner Expectations	Assessment Standards	Emphasis (%)
The student will: • demonstrate efficient key entry, editing and formatting of reports, correspondence and tables	*Assessment will be based on:* • a series of five, 20-minute production timings over a period of no more than eight consecutive class periods. On at least two occasions for each type of document (report, correspondence, table), the student will produce mailable documents at a minimum of 25 production words per minute with no more than one uncorrected format or keying error in each document. **Refer to assessment instruction Word Processing Document Production Checklist— Level III**	60–80
• demonstrate appropriate workstation management procedures	• observations over the last quarter of the instructional period, during timed and untimed work. Students will consistently demonstrate touch keyboarding and appropriate workstation techniques and behaviours as outlined in assessment instrument: **Workstation Techniques—Level III**.	10–20

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Text Entry (Input)	*The student will:*
	
	 • demonstrate efficient and accurate keystroking and software command use to open and name files and to produce mailable documents at the designated production rate
	   – enter text from error free copy in which text is:
	     • formatted
	     • unformatted	

Concept	Specific Learner Expectations	Notes

Text Entry (Input) (continued)	*The student will:*
	– enter text from **draft, edited** copy in which text is:
	  • formatted
	  • unformatted
	– enter text from **unedited** copy in which text is:
	  • formatted
	  • unformatted.	

Text Manipulation (Process)	• demonstrate appropriate key commands to edit and delete text • move through document(s) efficiently by using appropriate cursor movement tools/commands.	arrows, select, undo, goto.
Document Production (Output)	• use help functions and references as appropriate • demonstrate appropriate key commands to manage documents efficiently and to maintain document security • demonstrate appropriate key commands to produce the following documents in mailable form – manuscripts – personal and business letters – tables (single/multi-column) • demonstrate appropriate key commands to print and save documents using alternative formats.	mailable form: accurate and correctly formatted.
Workstation Management (Professionalism)	• apply correct workstation position and routines that encourage: – good health and safety (posture, positioning of hardware and furniture) – security for hardware, software, supplies and personal work • demonstrate efficient and appropriate use of time and resources in terms of: – start-up procedures – organization of work area – closing procedures – decision making	

Concept	Specific Learner Expectations	Notes
Workstation Management (Professionalism) (continued)	*The student will:* • plan activities • organize data/information/resources • consider alternatives – evaluate activities/results • use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF306: SPREADSHEET III

Level: **Intermediate**

Prerequisite: **Spreadsheet I (INF104)**

Corequisite: **Keyboarding II (INF202; Recommended)**

In this module, students use spreadsheets to manipulate and communicate date in an effective presentation. Students will apply all appropriate features, including charts and graphs, to present a display linking spreadsheets with other documents.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of all appropriate spreadsheet software commands and worksheet management techniques to generate an accurate, organized worksheet that can merge files with other documents and present data/information using charts and graphs.

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Data Entry (Input)	*The student will:* - demonstrate appropriate key commands to: – open/create files/templates/graphs/charts – merge files – enter data • number pad/keyboard value • keyboard—label • replicate formulae • paste • import • name files.	
Data Manipulation (Process)	- demonstrate key commands to format appropriate spreadsheet software features: – format	alignment cells, rows, columns templates alignment number format ($, %, decimals) text format column widths/row heights

Concept	Specific Learner Expectations	Notes

Data Manipulation (Process) (continued)	*The student will:*
	
	   – edit cells/data/formulae
	
	  • sort data
	   – copy
	   – cut
	   – paste
	   – sort
	  • calculate/recalculate
	  • move through worksheet(s) efficiently by using appropriate cursor movement tools/commands
	   – split screen
	   – freeze
	  • use help functions and references as appropriate.
		heights
		borders/shading
		hidden notes
		macros
		draw tools
		lock cells
		create/link multiple worksheets
		calculate/ recalculate
		
		utilize draw tools to display data
		table look-up comparisons
		
		view/modify
		   values
		   titles
		   labels
		   legends
		   font
		   size
		   colour
		   pattern
		   grids
		   borders

Worksheet Production (Output)	• demonstrate appropriate key commands to:
	  – save files in a variety of formats
	  – customize and print worksheets
	    • formats (portrait, landscape)
	    • complete/sections	

Concept	Specific Learner Expectations	Notes

Worksheet Production (Output) (continued)	*The student will:*
	● demonstrate appropriate key commands to:
	 – save files in a variety of formats
	 – customize and print worksheets
	   ● formats (portrait, landscape)
	   ● complete/sections (partial worksheet)
	 – print
	   ● illustrated hard copy reports
	   ● merge spreadsheet with other documents
	 – assess the effectiveness of the spreadsheet design and the process of creating the worksheet/graph display.
		budgets, financial records, investments stock market
		
		project plan
		
		investigate and research possible project
		
		 – determine the extent of the project parameters
		 – identify hardware, software, resource support
		 – collect, code, enter and input data
		 – collect/organize information/ resources
		 – design a spreadsheet file/template to meet a specific application
		 – key/copy/import /scan data, formulae
		
		analyze product/process
		
		identify alternative formats/structures
		
		use critique form to evaluate report and/or presentation.

Concept	Specific Learner Expectations	Notes

Workstation Management (Professionalism)	*The student will:*
	
	● review key features of the spreadsheet software package
	  – capabilities
	  – system requirements
	  – platform options
	  – command structure
	
	● apply correct workstation position and routines that encourage:
	  – good health and safety (posture, positioning of hardware and furniture)
	  – security for hardware, software, supplies and personal work
	
	● demonstrate efficient and appropriate use of time and resources in terms of:
	  – start-up procedures
	  – organization of work area
	  – closing procedures
	
	● apply effective decision-making strategies in production assignments
	  – plan activities
	  – organize data/information/resources
	  – consider alternatives
	  – evaluate activities/results
	
	● use related terminology accurately to describe basic processes, procedures and tools	

MODULE INF307: DATABASE III

Level: Advanced

Prerequisites: Keyboarding I (INF102)/Database II (INF209)

Corequisite:

Databases are designed to efficiently handle the processing of complex and sophisticated applications by providing access to large volumes of data and information that is normally retrieved electronically through remote computer links. Database files, however, can be created and used in the classroom through personal computer workstations. This module provides the opportunity to use the remaining advanced database commands and functions that support the development of applied database skill levels and graphic presentations to enhance report presentation.

Module Learner Expectations

The student will:

- create, enter data, edit, format and link a graphic presentation for complex electronic database record

- demonstrate efficient data entry, graph manipulation, time management and workstation techniques.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Data Entry (Input)	*The student will:*
	- demonstrate appropriate key commands to:
	  – open/create files
	  – enter data
	    • link
	  – name files
	  – format design parameters using an appropriate entry procedure.
		key copy, import, scan various formats.

Data Manipulation (Process)	- demonstrate appropriate key commands to:
	  – format data
	  – format data/graphic representations
	  – link two or more graphic representations
	  – enhance graphic representations
	  – proofread, edit data
	  – advanced graphic representations
	- move through record(s) efficiently by using appropriate cursor movement tools/commands
		create, edit, calculate, search
		
		font-type, style, size
		
		stacked/overlapped grid lines, fills
		
		hatch patterns
		
		display/hide series of data

Concept	Specific Learner Expectations	Notes
Data Manipulation Process (continued)	*The student will:* ● use help functions and references as appropriate.	sequence, labels, titles symbols, data clarity presentation impact.

Record Production (Output)	● demonstrate appropriate key commands to:
	  – save files
	  – preview records
	  – print documents
	
	● demonstrate appropriate key commands to produce the following report:
	  – an illustrated presentation using manual/automatic graphic data display using the following process:
	
	  ● identify application(s)
	
	  ● identify/collect/organize information/resources
	
	  ● plan/execute activities
	
	  ● critique results
	
	  ● access the effectiveness of the database and storage/retrieval processes
	
	  ● compare database systems.
		graphic generation
		 – create
		 – import
		 – scan
		 – software generation
		topic ideas
		community data
		libraries
		agricultural inventories
		business inventories
		help features
		flexibility
		user friendly
		response time.

Workstation Management (Professionalism)	● review key features of the database software package:
	  – capabilities
	  – system requirements
	  – platform options
	  – command structure
	
	● apply correct workstation position and routines that encourage:
	  – good health and safety (posture, positioning of hardware and furniture)
	  – security for hardware, software, supplies and personal work
	
	● demonstrate efficient and appropriate use of time and resources in terms of:
	  – start-up procedures
	  – organization of work area
	  – closing procedures	

MODULE INF307: DATABASE III (continued)

Concept	Specific Learner Expectations	Notes
Workstation Management (Professionalism) (continued)	*The student will:* • apply effective decision-making strategies in production assignments: – plan activities – organize data/information/resources – consider alternatives – evaluate activities/results • use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF308:   PRESENTATION III

Level: Advanced

Prerequisite: Presentation II (INF210)

Corequisites: Design Techniques—Design Studies (Recommended)
                    Intermediate Graphic Design—Communication Technology
                    (Recommended)

Desktop published documents resemble those produced by the publishing industry and are created by
somewhat similar publishing processes such as composing, editing, typesetting, formatting, graphic
generation and page layout. This module provides an opportunity to expand and refine those desktop
publishing and graphic skills required to create professional quality documents.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of advanced graphing and/or desktop publishing software
  commands and text/graphics layout and management techniques to produce a desktop published
  document.

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Text/Graphics Entry (Input)	*The student will:* - demonstrate appropriate key commands to: - open/create files/templates - key, load, import, scan text and graphic files - name files - import ASCI - file conversion.	research a variety of desktop publishing applications sources of graphics - clip art - art creation - mechanical drawing animation.
Text/Graphics Manipulation (Process)	- demonstrate appropriate key commands to: - format text/graphics - proofread, edit text, position graphics - address the factors that affect desktop publishing layout: - identify audience, message - determine budget, resource, time constraints	

MODULE INF308: PRESENTATION III (continued)

Concept	Specific Learner Expectations	Notes

Text/Graphics Manipulation (Process) (continued)	*The student will:*
	● establish document layout and specifications:
	● create/import graphics elements:
	  – clip art
	  – art creation
	  – mechanical drawing
	  – animation
	● merge graphics and text
	● story editor
	  – back publications
	  – index entry/format
	  – page/cross reference
	  – character codes
	● graphics
	  – grayscale scans
	  – independent versus inline
	  – image control
	  – lightness/contrast settings
	  – multi-colour
	  – overlays
	  – edits
	● develop page format(s)
	  – import/export and link data charts to other applications
	● plan/create customized desktop templates
	● move through document(s) efficiently by using appropriate cursor movement tools/commands
	● create objects using special effects
	● use help functions and references as appropriate.
		select various desktop publishing applications that combine text and graphics, and incorporate desktop publishing features:
		– personal documents
		– class assignments
		– school stationery, newsletter, newspaper, yearbook
		– signs, announcements
		– invitations
		– advertisements
		– brochures (single-, folded-page)
		– reports, manuals, booklets
		– community activities
		– customer documents
		– business applications
		
		prepare text, illustrations, graphics
		
		create camera ready page layouts
		
		adhere to publishing industry standards.

Concept	Specific Learner Expectations	Notes

Document Production (Output)	*The student will:*
	• demonstrate appropriate key commands to:
	  – save files
	  – print documents
	  – printer drivers
	  – bitmapped
	  – postscript/non-postscript
	• demonstrate appropriate key commands to produce quality desktop publishing documents.	

Workstation Use (Professionalism)	• review key features of the desktop publishing software package:
	  – capabilities
	  – system requirements
	  – platform options
	  – command structure
	• identify data input sources
	• apply correct workstation position and routines that encourage:
	  – good health and safety (posture, positioning of hardware and furniture)
	  – security for hardware, software, supplies and personal work
	• demonstrate efficient and appropriate use of time and resources in terms of:
	  – start-up procedures
	  – organization of work area
	  – closing procedures
	• apply effective decision-making strategies in production assignments:
	  – plan activities
	  – organize data, information, resources
	  – consider alternatives
	  – evaluate activities/results
	• use related terminology accurately to describe basic publishing processes, procedures and tools.	

MODULE INF309: TECHNICAL WRITING I

Level: Intermediate

Prerequisite: Notemaking I (INF107)

Corequisite: None

In this module students learn and practise the basic principles of technical report preparation and presentation. Students will apply their ability to research, summarize and edit to produce clear and concise reports.

Module Learner Expectations

The student will:

● prepare technical reports that are clear, concise and meet the needs of the report user.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Preparing Technical Reports (Input)	*The student will:*
	● identify examples of technical writing
	  – instruction manuals
	  – research reports
	● describe characteristics of effective technical writing:
	  – directed to topic/need
	  – accurate (terminology, procedures, data)
	  – current
	  – clear
	  – complete (procedures, processes)
	  – concise
	● compare technical writing with other writing; e.g., creative, historigraphical, journalistic.
		Examples of technical writing can be found in every CTS strand.

Improving Technical Reports (Process)	● identify and demonstrate competencies needed for effective technical writing
	  – concentration
	  – precision
	  – research skills
	  – summarization skills
	● analyze and improve examples of technical writing in terms of :
	  – clarity
	  – directed to topic/need.	

MODULE INF309: TECHNICAL WRITING I (continued)

Concept	Specific Learner Expectations	Notes

Presenting Technical Reports (Output)	*The student will:*
	
	• prepare summaries of business reports, magazine articles and research data using:
	  – point summary
	  – concept maps
	  – précis
	
	• produce and present a technical report in an area of career interest.	

MODULE INF310: RECORDS II

Level: Advanced

Prerequisite: Keyboarding I (INF102)

Corequisite: Database II (INF209)

This module focuses on the advantages of an automated records system. Microimage records and record management control processes are emphasized. Students who do not have database skills will require time to develop the skills to enter, edit, sort, search, select, format and print records. Numeric subject and geographic coding are emphasized.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate procedures for controls of an electronic records system that codes alphabetically, numerically, geographically and by subject

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes

Create Records/Files (Input)	*The student will:*
	- demonstrate appropriate procedures to open/create a record system:
	  – goals
	    • advantages of electronic records
	    • microimage records versus manual records
	  – purpose
	    • relate system to need
	  – operation—electronic records management
	    • hierarchy structure
	      - ASCII value
	      - bit
	      - byte
	      - character
	      - field
	      - record
	      - file
	      - database library
	  – classify operation
	    • use
	    • place
	    • value
		assess volume, use equipment, activity, speed accuracy, cost
		
		observe policies for managing records in the electronic office
		
		contrast manual/ electronic records systems.

Concept	Specific Learner Expectations	Notes

Create Records/Files (Input) (continued)	*The student will:*
	– create electronic records, files, templates:
	  • type: numeric, subject, geographic storage rules
	  • code
	  • cross reference
	  • index
	– enter data
	  • key, magnetic tape/disk, optical digital data disk, COR records, human speech, electronic mail, touch of operator.	

Use and Maintain (Process)	• demonstrate appropriate procedures to process data/information for a records management system
	  – formal data/information electronically
	    • files
	    • cards
	    • templates
	    • reports
	  – edit information/data
	    • editing for accuracy/spelling
	    • updating
	    • purging
	• move through records/file system by:
	  – sorting
	  – selecting
	  – maintaining
	  – purging
	• use help references as appropriate:
	  – ARMA standard rules for consistency.
		working knowledge of database software package may require that student will need additional time if software skills are not efficient (see Database I, II and III for special skill learning for database software)
		
		student can prepare a manual for reference—coding rules.

Retrieve and Distribute (Output)	• demonstrate appropriate procedures to:
	  – control
	    • analyze value categories life cycle of records
	    • security
	    • data integrity
	• demonstrate the appropriate procedures to complete a records management applications effectively
	  – feedback.	

Concept	Specific Learner Expectations	Notes

Workstation Management (Professionalism)	*The student will:*
	
	• review key features of the records management software package:
	  – capabilities
	  – system requirements
	  – platform options
	  – command structure
	
	• apply correct workstation position and routines that encourage:
	  – good health and safety (posture, positioning of hardware and furniture)
	  – security for hardware, software, supplies and personal work
	
	• demonstrate efficient and appropriate use of time and resources in terms of:
	  – start-up procedures
	  – organization of work area
	  – closing procedures
	
	• apply effective decision-making strategies in production assignments:
	  – plan activities
	  – organize data/information/resources
	  – consider alternatives
	  – evaluate activities/results
	
	• use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF311: ELECTRONIC OFFICE II

Level: Advanced

Prerequisite: Keyboarding II (INF202)
                  Word Processing II (INF204)

Students will demonstrate effective office environment processes and protocols related to quality management, productivity and efficient communication.

Module Learner Expectations

The student will:

- demonstrate basic office procedures and protocols within a simulated office environment

- demonstrate efficient text entry, document management and workstation techniques.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Office Environment (Input)	*The student will:* • investigate and compare various business offices organizations with respect to: – organizational structure – purpose/place in the economy – priorities/philosophy – administrative structures – interdependence with other businesses • review various job descriptions in terms of: – responsibilities (direct, indirect) – setting priorities – reporting structure – opportunities for initiative – independent action • describe the office worker's role in the office • compare a work area in terms of present and past equipment and productivity: – hardware – software – telecommunications – resources/references – ergonomics • describe the change process within an office as electronic technologies change the office environment.	select from offices of various sizes (e.g., home business, large corporation) various sectors of the economy (e.g., oil, service industry, legal, real estate, insurance, auto dealership, health services)

Concept	Specific Learner Expectations	Notes

Office Procedures (Process)	*The student will:*
	• review procedure manuals that outline the protocols and procedures within an office
	• propose strategies by which an office could improve the commitment to quality management
	• analyze situations of interpersonal conflict and propose strategies to resolve these and avoid future conflicts
	• implement strategies that increase personal productivity in terms of:
	  – time and work management
	  – setting priorities
	  – resource management
	• identify routines and protocols used to handle the following office functions:
	  – sales
	  – banking
	  – shipping.	

Managing Communications (Output)	• outline and demonstrate basic strategies for managing communications and decision-making within the office
	• people:
	  – meetings and conferences
	  – travel
	• documents (incoming/internal/outgoing):
	  – creation
	  – production
	  – distribution
	  – tracking
	• goods
	• finances.	

Workstation Management (Professionalism)	• apply correct workstation position and routines that encourage:
	  – good health and safety (posture, positioning of hardware and furniture)
	  – security for hardware, software, supplies and personal work
	• demonstrate efficient and appropriate use of time and resources in terms of:
	  – start-up procedures
	  – organization of work area
	  – closing procedures	

MODULE INF311: ELECTRONIC OFFICE II (continued)

Concept	Specific Learner Expectations	Notes
Workstation Management (Professionalism) (continued)	*The student will:* • apply effective decision-making strategies in production assignments: – plan activities – organize data/information/resources – consider alternatives – evaluate activities/results • use related terminology accurately to describe basic processes, procedures and tools.	

MODULE INF312: SPECIALTY APPLICATIONS

Level: Advanced

Prerequisite: Word Processing II (INF204)

Corequisite: Word Processing III (INF304; Recommended)
                 Keyboarding III (INF203; Recommended)

In this module students will investigate specialized applications and work environments such as legal, medical, insurance, petroleum, agriculture and mining. Learnings will include typical processes and procedures and terminology.

Module Learner Expectations

The student will:

- demonstrate efficient and accurate use of procedures and hardware and software within a selected specialty area

- demonstrate appropriate workstation management procedures.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
	The student will:	

MODULE INF313:   EMERGING COMPUTER TECHNOLOGIES II

Level: Advanced

Prerequisite: Keyboarding I (INF102)

In this module students will investigate technological innovations and asses their impact on society and our economy, with particular emphasis on the management of information. Topics such as robotics, artificial intelligence or virtual reality could be addressed, including computer generated applications or by using computer programming techniques.

Module Learner Expectations

The student will:

- prepare a description and analysis of a selected technological innovation, including an overview of present and future applications as well as implications for social and economic factors.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
	The student will:	

MODULE INF314:   PROGRAM APPLICATION I

Level: **Advanced**

Prerequisite: **Programming V (INF220)**

Programmers design algorithms and use either a procedure-oriented or object-oriented language structure to code instructions for specific and unique computer tasks. In this module students have an opportunity to increase programming skills by creating and using external files.

Module Learner Expectations

The student will:

- create an algorithm/ classes to solve programming applications

- create a structured computer program involving creation and use of external files.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Algorithms/Classes	*The student will:* • modify existing/develop new algorithms/classes • identify/describe the problem • list each step required to solve the problem/list the required components of the data structure • develop the appropriate logic/data components required to achieve the solution • develop the appropriate methods of creating and accessing data stored in external files • compare characteristics and use of text and binary files • select appropriate file structure based on problem characteristics • apply structured programming constructs to modify/create a schematic/flowchart/ pseudocode indicating how the solution will be achieved (IPO/HIPO).	
Computer Language Syntax	• use constants, variables, data structures, operands • use reserved words, commands, statements, operators, sub-routines, functions • use language specific derived data types	

Concept	Specific Learner Expectations	Notes
Computer Language Syntax (continued)	*The student will:* ● input data using reserved words or predefined classes: – embed/read from external files/enter data – create/assign values/operations to derived data types – open and access contents of text and binary files sequentially/randomly ● process data: – calculations/manipulations/decision control/ branching/looping/sub-routines/functions/ classes/objects/methods/files ● edit/modify existing code ● output/link program segments/programs using reserved words or predefined classes: – text/data/graphics – create and access text and binary files.	
Structure Computer Programming Applications	● access appropriate computer language resource support ● describe the purpose/use of text and binary files ● discuss the need for/advantages of text and binary files ● utilize/develop program segments that create/open/write to/read from/append to text and binary files ● utilize/develop program segments that access the contents of external files sequentially and randomly ● utilize/develop program segments that access multiple files ● identify situations that lend themselves to specific types of file structures ● apply appropriate file structures and operations in a program ● develop algorithms/classes ● design output format/file structure ● key/code the instructions ● test run program ● debug/edit program ● execute program	

MODULE INF314: PROGRAM APPLICATION I (continued)

Concept	Specific Learner Expectations	Notes
Structure Computer Programming Applications (continued)	*The student will:* ● document program ● assess activities/results.	
Terminology	● use appropriate computer programming terminology.	

MODULE INF315: PROGRAM APPLICATION II

Level: **Advanced**

Prerequisite: **Program Application I (INF314)**

Programmers design algorithms and use either a procedure-oriented or object-oriented language structure to code instructions for specific and unique computer tasks. Various computer languages have been developed over the years to improve computer communication efficiency. In this module students will have an opportunity to increase programming skills by working with a second programming language.

Module Learner Expectations

The student will:

- create an algorithm/classes to solve programming applications

- create a structured computer program using a second programming language.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Algorithms/Classes	*The student will:* • modify existing/develop new algorithms/classes • identify/describe the problem • list each step required to solve the problem/list the required components of the data structure • develop the appropriate logic/data components required to achieve the solution • identify generic characteristics of programming languages • identify steps involved in problem solving independent of programming language • apply structured programming constructs to modify/create a schematic/flowchart/ pseudocode indicating how the solution will be achieved (IPO/HIPO).	
Computer Language Syntax	• use constraints, variables, data structures, operands in a second programming language • use reserved words, commands, statements, operators, sub-routines, functions in a second programming language • use second language specific derived data types	

Concept	Specific Learner Expectations	Notes
Computer Language Syntax (continued)	*The student will:* ● input data using reserved words or predefined classes of a second programming language: – embed/read/enter data – create/assign values/operations to derived data types ● process data using second language constructs: – calculations/manipulations/decision control/ branching/looping/subroutines/functions/ classes/objects/methods ● output/link program segments/programs using reserved words or predefined classes of a second programming language: – text/data/graphics.	
Structure Computer Programming Applications	● access appropriate computer language resource support ● discuss the parallels/differences between the two programming languages ● utilize/develop program segments using second language constructs to enter/manipulate/output data ● recode first language programs using second programming language ● apply second language constructs in a program ● develop algorithms/classes ● design output format ● key/code the instructions ● test run programs ● debug/edit program ● execute program ● document program ● assess activities/results.	
Terminology	● access appropriate computer language resource support.	

MODULE INF316: PROGRAM APPLICATION III

Level: Advanced

Prerequisite: Program Application II (INF315)

Programmers normally follow a general or specific set of guidelines when developing computer programs for a client. However, when creating their own computer programs they are able to work within the parameters of their own creativity. In this module students will have an opportunity to consolidate programming skills by creating their own programming project.

Module Learner Expectations

The student will:

- create an algorithm/classes to solve an identified programming application

- create a structured computer program to solve the selected problem.

Specific Learner Expectations

Concept	Specific Learner Expectations	Notes
Algorithms/Classes	*The student will:* • modify existing/develop new algorithms/classes • identify/describe the problem • list each step required to solve the problem/list the required components of the data structure • develop the appropriate logic/data components required to achieve the solution • identify steps involved in problem solving independent of programming language • apply structured programming constructs to modify/create a schematic/flowchart/ pseudocode indicating how the solution will be achieved (IPO/HIPO).	

Computer Language Syntax	• use constraints, variables, data structures, operands in an appropriate programming language
	• use reserved words, commands, statements, operators, sub-routines, functions in the selected programming language
	• use language specific derived data types
	• input data using reserved words or predefined classes:
	   – embed/read/enter data
	   – create/assign values/operations to derived data types	

Concept	Specific Learner Expectations	Notes

Computer Language Syntax (continued)	*The student will:*
	• process data:
	  – calculations/manipulations/decision control/ branching/looping/sub-routines/ functions/classes/objects/methods
	• output/link program segments/programs using reserved words or redefined classes:
	  – text/data/graphics.	

Structure Computer Programming Applications	• access appropriate computer language resource support • utilize/develop program segments to enter/ manipulate/output data • apply selected language constructs in a program • develop algorithms/classes • design output format • key/code the instructions • test run programs • debug/edit program • execute program • document program • assess activities/results.	
Terminology	• use appropriate computer programming terminology.	

DATE DUE SLIP